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Message from the Editors

TOJNED welcomes you.

I am very pleased to publish sixth issue in 2012. As an editor of The Online Journal of New Horizons in Education (TOJNED), this issue is the success of the reviewers, editorial board and the researchers. In this respect, I would like to thank to all reviewers, researchers and the editorial road.

Sixth issue covers different research scopes, approaches which subjects about new developments in education by valuable researchers. I and The Online Journal of New Horizons in Education (TOJNED) editorial team will be pleased to share various researches with this issue as it is the miracle of our journal. All authors can submit their manuscripts to tojnedjournal@gmail.com for the next issues.

Call for Papers

The Online Journal of New Horizons in Education (TOJNED) invites article contributions. Submitted articles should be about all aspects of educational science and may address assessment, attitudes, beliefs, curriculum, equity, research, translating research into practice, learning theory, alternative conceptions, socio-cultural issues, special populations, and integration of subjects. The articles should also discuss the perspectives of students, teachers, school administrators and communities.

The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission The Online Journal of New Horizons in Education (TOJNED). For any suggestions and comments on TOJNED, please do not hesitate to send mail.

April 01, 2012

Prof. Dr. Aytekin İŞMAN
Editor-In-Chief

Message from the Editor

I am very pleased to publish sixth issue of our journal in 2012. As an Editor of Turkish Online Journal of New Horizons in Education (TOJNED), I would like to thank to all reviewers, researchers and the editorial board for their efforts on publication process of this issue.

I and Turkish Online Journal of New Horizons in Education (TOJNED) editorial team will be pleased to announce sixth issue that valuable researchers share their various researches as it is also significant to reflect as a mirror of the development of this journal. In addition, our journal becomes sponsor of two international conferences. I am honoured to announce these conferences which are International Conference on Interdisciplinary Research in Education (15-17 May 2012) in North Cyprus, www.icoinet.net, International Conference on New Horizons in Education (5-7 June 2012) in Prague, www.int-e.net. I look for your participation to these conferences. For the journal, all authors can submit their manuscripts to tojnedjournal@gmail.com for the next issues.

April 01, 2012

Prof. Dr. Cem BİROL

Editor

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AN EXPLORATION OF THE EPISTEMIC DIMENSION OF PRESERVICE TEACHERS' IDENTITY

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Abstract: This paper identifies and illustrates binary epistemic dynamics influencing the construction of preservice teachers' pedagogical identity. An exploratory pilot study was used to explore epistemic change and constancy in preservice teachers' (n = 19) identity across five binary constructs (e.g., nature/nurture) used to structure an introductory subject in a Graduate Diploma of Education. The study revealed instances of dynamic interactivity between structure and content influencing participants' tendency to polarise, depolarise, neutralise, relativise, and correlate binary constructs. Some of these dynamics problematise epistemological theories which propose linear development between absolutist, multiplist, and evaluativist ways of knowing (Tabak & Weinstock, 2008). The study offers tentative support for incorporating epistemic pedagogies in preservice teacher education courses and expanding the dialogue over the direction and metaphor of development used to construct teachers' epistemic identity.
Keywords: epistemics, epistemological development, teacher identity

Introduction

Epistemology is concerned with ways of knowing. Epistemics reflects a concern with the cognitive, social and affective dynamics of real-world contexts that produce and transform ways of knowing. A teacher's personal epistemology (i.e., their way of knowing and beliefs about knowledge) exerts a powerful influence on their ability to perceive and engage the diversity and complexity of educational environments (Bendixen & Feucht, 2010; Khine, 2008). The link between epistemology and education is receiving increasing attention from researchers who appreciate the reciprocal relationship between a teacher's personal epistemology and their pedagogical identity (e.g., Bendixen & Feucht, 2010; Khine, 2008; Schraw & Olafson, 2008). For example, Schraw and Olafson (2008) call for future research to explore 'the extent to which the type and amount of preservice teacher education training affects epistemological and ontological worldviews' (p. 39). Such research would add to existing claims that there is an important epistemic dimension to a teachers' pedagogical identity as manifested in everyday ways of valuing, nurturing, motivating, guiding, and

relating to students (Borko & Putnam, 1996). Accordingly, this paper explores the relationship between epistemic and pedagogical identity.

Epistemic identity refers to characteristic ways of knowing that construct, and are constructed by, the life-world of an individual or group. These ways of knowing represent implicit or explicit ideas and beliefs about knowledge, or attitudes to knowledge, that (in the context of education) may be expressed in anything from behaviour management styles to motivational techniques. For the purposes of this paper, epistemic identity is theorised using a general consensus of developmental theories described in Hofer and Pintrich (1997). These developmental theories propose a natural progression through qualitatively different and increasingly complex epistemologies. The general consensus of these developmental theories is that:

> Development proceeds from (1) "absolutist" – the conception of knowledge and knowing as objective and absolute; to (2) "multiplist" regarding all knowledge as subjective and relative and, therefore, indeterminate because of multiple points of view; to (3) "evaluativist" – the acceptance and integration of subjective and objective aspects of knowledge that would permit a degree of evaluation and judgement of knowledge claims. (Tabak & Weinstock, 2008, p. 178)

A premise of this study is that different epistemological developments and trajectories can influence teacher identity and praxis.

Teacher identity relates to the fluid constellation of knowledge and ways of knowing, and being and ways of being that an individual teacher represents within a particular school context. Understandably, teacher identity is a central construct in preservice teacher education courses. For example, the introductory chapter of the prescribed text for the preservice teachers in this study notes:

> The shape of identity and belief formation, professional thinking and decision making (i.e., deciding what actions to take) will be unique for each of us. Further, our identity will change over time in response to reflecting upon our professional knowledge and practice, the learning outcomes our students achieve, and the ideas we are exposed to from colleagues, researchers and other stakeholders in education. (Churchill, et al, 2011, p. 16)

Some researchers have proposed that this 'change over time' in teacher identity reflects a sequence of epistemological development. For example, Van Rossum and Hamer (2010, p. 15) suggest that conceptions of a good teacher develop in the following sequence: A good teacher (1) imparts structured knowledge, (2) transmits structured knowledge, (3) interacts and shapes knowledge, (4) challenges and develops thinking, (5) teaches through dialogue, and (6) teaches through mutual trust, authentic relationships and care. They propose that this sequence reflects a progressive development on a continuum from teacher-directed to student-directed practice. Teacher-directed and student-directed practice represents one binary construct relevant to the exploration of a relationship between pedagogical and epistemic identity.

There are many binary constructs that are of similar importance in the recognition of a teacher's identity. The structuring of binary relationships in sociocultural contexts can powerfully reveal epistemic identity (e.g., Reich, 2002; Perry, 1970). Binary relationships refer to the types of relationship (e.g., conflict, complement, negation) between the parts of a pair. A binary is a pair of concepts usually related as opposites or alternatives (e.g., Liberal/ Conservative, Traditional/Progressive, and Subjective/Objective). Binaries are simple but powerful categories of knowledge that enable discrimination and selection between concepts and entities, and relative descriptions of concepts and entities. They allow the learner to choose one and/or the other and to locate their knowledge in relation to the knowledge of others. Binaries are the enablers of choice and decision that make knowledge powerful and meaningful. However, binaries can be de-contextualised (or pre-contextualised) which can lead to dualistic and dichotomising tendencies. Here, the structure of knowledge (the way of knowing or epistemology) dominates the accumulation and transformative possibilities of human experience. For example, teacher-centred or student-centred approaches may be viewed and valued, a priori, as 'good' or 'bad'. The broader purpose of this pilot study is to map and re-contextualise participants' epistemologies in order to facilitate more conscious and evaluative ways of knowing. This specific purpose of this paper is to identify and illustrate some binary epistemic dynamics that interact with preservice teacher identity.

Specifically, this study utilises five binary constructs (Appendix A) on the basis of their presence in teacher education literature and school discourse. These five binary constructs include (1) teacher-centred and student-centred approaches to learning, (2) natural and nurtured approaches to ability, (3) inclusive and exclusive approaches to diversity, (4) intrinsic and extrinsic approaches to motivation, and (5) permissive and authoritarian approaches to management. Binary constructs are used for their relevance in educational discourse and for their ability to reveal epistemic sophistication through the diverse ways in which the parts of a binary pair can be related. Collectively, the constructs are used to represent significant considerations in teachers' everyday practice and the formation of teacher identity.

Method

Context and participants The exploratory pilot study was conducted with preservice teachers (n = 19) in the introductory subject of a Graduate Diploma of Education at a regional Australian university. The participants include 10 females and 9 males aged between 20 and 50 from a variety of tertiary backgrounds in science, arts, and technology. The subject - *Foundations of Education* - introduces a range of theoretical approaches to the study of the histories, philosophies and practices of education.

Data collection and analysis The study piloted a data collection scale – The Binary Differential Scale (Appendix B) and a pedagogical tool - The Binary Differential Grid (Appendix C). The Binary Differential Scale (BDS) provides a mixed-methods way to collect and analyse data relevant to epistemic positions and change. The Binary Differential Grid (BDG) is pedagogical tool for implicitly developing increasingly complex and evaluative epistemologies (Adam, 2011).

The Binary Differential Scale (BDS) is designed to (1) quantitatively identify structural changes and dynamics related to binary epistemic beliefs and/or (2) qualitatively identify content and contexts influencing binary epistemic change. In its basic form, the BDS is a seven-point interval scale (3, 2, 1, 0, 1, 2, 3)[1] with intervals evenly distributed between two poles (the *left binary* and *right binary*) of a binary construct (e.g.

[1] The left binary intervals are coded -3, -2, -1 for quantitative analysis.

natural/synthetic). The centre-point interval is subdivided into a 'neutral' and 'no identification' zone. The neutral position is scored as a zero (0). The no-identification position is factored in overall case frequency analyses to show the percentage of cases who did not identify with the binary construct at all. The BDS is slightly different to a Likert Scale because it allows for the identification of multiple positions and is reliant on interdependent binary constructs (e.g., intrinsic motivation and extrinsic motivation), rather than topical statements. It is more similar to a Semantic Differential Scale in its use of binary constructs but seeks to examine epistemic dimensions of binary evaluations rather than attitudes[2]. As noted, a participant can identify one or more positions during each period. For example, in light of the 'nature/nurture' binary, a participant indicating Position 3 on the Left Binary during Period 1 would likely have a strong identification with a natural perspective in a specific domain (e.g. intelligence). A participant indicating Position 3 on the left binary and the right binary would likely have a strong identification with natural and nurtured approaches[3]. Cumulatively, the collection of related quantitative scales enables quantitative representation of binary relationships and dynamics in and through time.

While part of the scale enables a quantitative representation of binary relationships and dynamics, these relationships and dynamics can be effectively explored with the complementary qualitative data. For example, how does a participant rationalise or explain a 'strong identification with the left binary during period 1' or 'no identification during period 2'? The open-ended data box (Appendix B) is used to gather complementary information to rationalise and contextualise the quantitative identification. The interval scale was directly linked to the open-ended qualitative identification so that the technique provided complementary numerical and narrative data. The narrative data from the BDS was analysed using qualitative thematic

[2] Though, no doubt, *epistemology* and *attitude* are linked constructs.

[3] Participants who indicate multiple positions during the same period often have a more contextual approach than participants who identify strongly with only the left or right binary.

coding (theory-led and inductive) to cross-reference numerical data and to explore specific formative influences on participant positions in and through time.

The BDS was used to collect qualitative and quantitative data on epistemic change influenced by focus groups, which were structured using the BDG. Ethical approval for the study was granted by the institution's ethics body and all participants signed informed consent forms for the use of data. Collectively, data were gathered from each participant during a two-week period using (1) four[4] different Binary Differential Scales with accompanying qualitative rationales, each administered at three different intervals throughout the subject, and (2) four different Binary Differential Grids completed collaboratively during four focus group sessions, each of 1.5 hours duration. These data collection techniques were described in the Subject Outline and embedded into the subject structure using a Preparation Booklet. Participants submitted their completed Preparation Booklet (containing the completed binary scales, qualitative rationales, and binary grids) with their final assessment – a series of short reflective essays outlining their current identification with each binary construct. These data were then subjected to quantitative analyses for central tendency (mean and median) and individual variation, and theory-led and inductive qualitative analyses.

Results and Analysis

Given the small sample and exploratory nature of the study, the purpose of the quantitative analyses was to identify individual variations to direct qualitative analyses, rather than support statistical generalisations about cohort identity. The intention of this paper is to identify general epistemic dynamics and illustrate them with individual participant responses from the data. Archetypal qualitative examples of individual positions, change, and variance were identified from a quantitative analysis of the BDS. These dynamics serve to highlight some of the interactions between preservice teachers' epistemic and pedagogical identities.

[4] Preservice teachers engaged with four out of five binary constructs depending on their focus group rotation.

Quantitative Data. Quantitative data generated from the binary differential scales were analysed for individual and group central tendency and variation in time (i.e., at a particular interval) and over time (i.e., across the three intervals) in relation to each of the five binary constructs. More specifically, cohort central tendency and variations were used to examine:

1. binary identification (e.g., 32% of participants indicated an initial identification with a teacher-centred approach),
2. binary identification over time (e.g., 32% of participants indicated an initial identification with a teacher-centred approach compared to 23% of participants at the third identification),
3. overall correlation of binaries (e.g., cohort initially identified with student-centred, nurture-based, inclusive, and extrinsic motivations),
4. overall correlation of binaries over time (e.g., cohort finally identified with student-centred, nurture-based, inclusive, and intrinsic motivations),
5. gender differentiation[5] for binary identification (e.g., 40% of female participants initially identified with teacher-centred approaches, whereas 22% of male participants initially identified with teacher-centred approaches), and
6. gender differentiation for binary identification over time (e.g., 40% of female participants initially identified with teacher-centred approaches, whereas 17% of female participants finally identified with teacher-centred approaches).

Individual variations and central tendency were examined to identify preservice teachers who demonstrated:

1. the most dichtomising identifications (e.g., strong identification with authoritarian approaches),
2. the most dichotomising identifications over time (e.g., movement from a weak identification with nature-based influence to a strong identification with nature-based influence),
3. the most complementary identifications (e.g., strong identification with inclusive and exclusive approaches),
4. the most complementary identifications over time (e.g., strong identification with inclusive and exclusive approaches at all three intervals),

[5] Larger cohort sizes could be used to identify generational effects as well as gender effects.

5. the most significant switch between binary identifications over time (e.g., movement from a strong identification with a teacher-centred approach to a strong identification with a student-centred approach),
6. the most de-dichotomising identifications over time (e.g., movement from a strong identification with an authoritarian approach to a complementary strong identification with a permissive approach), and
7. the most stable identifications over time (e.g., a moderate identification with a student-centred approach at all three time intervals).

Table 1 reveals that the cohort identity was initially characterised by a preference for student-centred, nurture-based, inclusive, extrinsic, and authoritarian pedagogical approaches. The cohort identity was characterised in the final period by a preference for student-centred, nurture-based, inclusive, intrinsic, and an equal mix of permissive and authoritarian pedagogical approaches. The greatest range of positions during the initial period was associated with the teacher-centred and student-centred binary (3, 2) and the intrinsic and extrinsic binary (2, 3). The biggest range of positions during the final period were associated with the teacher-centred and student-centred binary (3, 2.5) and the inclusive and exclusive binary (3, 1). The least range of positions during the initial period was associated with the inclusive and exclusive binary (2.5, 1). The least range of positions during the final period was associated with the intrinsic and extrinsic binary (2, 0).

The greatest cohort change between the first and final period was the change from a preference for extrinsic to intrinsic approaches to motivation. The least cohort change between the first and final period was in the slight strengthening of identification with student-centred approaches. Other changes included (1) an overall weakening of identification with nurture-based approaches, (2) an overall strengthening of identification with inclusive approaches, and (3) an overall weakening of identification with authoritarian approaches.

Table 1. Cohort Central Tendencies for Binaries in First and Final Period

Binary Construct (Left and Right)	Period 1			Period 3		
	n	*M* *M**	*Mdn* *Range (L, R)*	*n*	*M*	*Mdn* *Range (L-R)*
(L) Student-Centred	19	0.07 (L)	0.00	13	0.23 (L)	0.00
(R) Teacher-Centred	13	0.06 (L)	(3, 2)			(3, 2.5)
(L) Nurture	18	1.33 (L)	1.50 (L)	15	0.73 (L)	0.50 (L)
(R) Nature	15	1.17 (L)	(3, 0)			(3, 0)
(L) Inclusive	12	0.92 (L)	0.75 (L)	7	1.30 (L)	2.00 (L)
(R) Exclusive	7	0.71 (L)	(2.5, 1)			(3, 1)
(L) Intrinsic Motivation	15	0.05 (R)	0.00	10	0.75 (L)	1.00 (L)
(R) Extrinsic Motivation	10	0.38 (R)	(2, 3)			(2, 0)
(L) Permissive	10	0.00	0.75 (R)	9	0.00	0.00
(R) Authoritarian	9	0.28 (R)	(2.5, 2)			(.5, .5)

Note. (L) = Left Binary, (R) = Right Binary, (*M*) = Mean, (*Mdn*) = Median. Figures represent averages on the 7-point (3, 2, 1, 0, 1, 2, 3) Binary Differential Scale (BDS). 3(L) or 3(R) are the maximum possible values. A zero (0) value would indicate an average cohort neutrality for a particular binary.

* The second mean is based only on participants who completed both periods.

Table 2. Epistemic Trajectories in Binary Constructs Over Time

Binary	Epistemic Trajectory				
	n	Increased Polarisation	Decreased Polarisation	Switched Polarity	Maintained Position
1	13	23%	38%	8%	31%
2	15	27%	40%	0%	33%
3	7	29%	14%	14%	43%
4	10	30%	20%	30%	20%

5	10	10%	90%	0%	0%
Average		22%	40%	10%	25%

Table 3. Participant Correlation Between Binaries in First and Final Period

Binary	Period	Participant and Gender																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		F	M	M	F	F	M	F	M	M	F	M	M	F	F	F	F	M	M	F
(L) Student-Centred	1	L	N	R	N	N	L	R	R	L	L	L	L	R	R	R	N	L	L	N
(R) Teacher-Centred	3	L	N	R	N	-	-	-	R	L	-	-	L	N	N	L	R	N	L	-
(L) Nurture	1	L	L	L	N	N	-	L	N	L	L	L	L	L	L	L	N	N	L	L
(R) Nature	3	L	L	L	N	L	-	-	N	L	-	N	L	N	N	N	L	N	L	-
(L) Inclusive	1	L	L	-	-	L	-	N	-	L	-	L	L	R	-	R	-	L	L	L
(R) Exclusive	3	N	L	-	-	-	-	-	-	-	-	-	L	R	-	L	-	L	L	-
(L) Intrinsic	1	R	-	R	N	N	-	L	N	-	N	L	N	L	R	R	N	L	L	R
(R) Extrinsic	3	L	-	L	L	-	-	-	L	-	L	-	-	-	L	N	N	N	L	-
(L) Permissive	1	-	L	R	R	-	-	-	R	L	L	-	R	R	N	-	R	-	-	-
(R) Authoritarian	3	-	N	N	N	-	-	-	N	-	L	-	N	N	R	-	N	-	-	-

Note. (L) = Left Binary, (R) = Right Binary, (N) = Neutral, (-) Incomplete, (F) Female, (M) Male.

Further analysis was used to explore individual variance from central tendency. Table 2 reveals general cohort trends through time, while Table 3 reveals individual participant trajectories across the five binary constructs over time. Quantitatively identified examples of individual variance were identified for qualitative analyses (theory-led and inductive) of complementary open-ended data. The following qualitative analysis helps to illustrate some of the structural and content dynamics affecting preservice teachers' epistemic and pedagogical identity in light of individuals' qualifications to their quantitative identifications.

Qualitative Data. This section identifies and illustrates binary epistemic dynamics interacting with pre-service teachers' pedagogical identities. These dynamics include (1) polarisation, (2) depolarisation, (3) neutralisation, (4) relativisation, and (5) construct correlation. Collectively, these dynamics provide a preliminary insight into the interdependence of teachers' epistemic and pedagogical identity.

Polarisation. Polarisation indicates a strong tendency to identify more with one binary pole (e.g. nature) than another (e.g. nurture). Polarisation reflects an epistemic tendency when the participant displays

a predisposition to attack or neglect the opposing binary independent of contextual, semantic, or situational factors. For relational and interdependent binaries, this sort of tendency could be considered characteristic of dichotomising, dualising, and absolutising epistemologies (i.e., black and white, either/or thinking). One participant indicated consistently strong identifications with left binaries across a range of constructs:

> It is my opinion that learning is at the core of human experience and therefore the motivation to learn naturally comes from within the individual. The quest for knowledge comes from natural motivation. To serve education from outside someone's natural curiosity is to dull the experience. (Participant 6; Binary 1: 1)
>
> Society is capitalist so that it values logico-mathematical intelligence and empowers the practical. (Participant 6; Binary 3: 1)
>
> Authoritarian styles create hegemonically masculine heroes. (Participant 6; Binary 5 Grid)

This participant had strong negative school-life experiences representing the right binary. For him, the 'right' binaries represented a homogenised set of pedagogies characterised by patriarchal, masculine competitiveness and conformity. Understandably, the participant's pedagogical identity was powerfully defined in relation to these constructions. Another participant who had strong identifications with the left binary offered a similar rationalisation:

> Coming from an authoritarian educator's background, I now lean towards a more permissive management style. Students need an opportunity to participate in the relevant regulations which will govern their learning environment so they can own it more. (Participant 9; Binary 5:1)

This participant had strong recollections of indiscriminately administered corporal punishments.

Conversely, a participant with different life experiences tended to identify strongly with the opposite binary:

> Teachers have a responsibility to take some control of the classroom situation. This would be dependent on the class, age, year level etc. I think it could come down to a 'give them an inch, they take a mile' attitude. (Participant 14; Binary 1:1)

This participant recalled negative school-life experiences with the left binary. Polarisation does not necessarily equate with epistemic simplicity in that it often reflects the strength of an individual's subjective experience. However, the ability to reconcile one's own subjective experience with others' conflicting subjective experiences is an indicator of epistemic complexity.

No participant became significantly more committed to their initial binary, or significantly more committed to a particular binary from a neutral position. However, the participant who did show most movement offers an interesting explanation:

> I moved a bit further along. I like the thought of the exception becoming the norm and that inclusivity in the classroom can have a positive change on society in general. (Participant 12; Binary 3:3)

This participant seems to acknowledge the relativity of the binary scale in relation to an underlying reality. Here, today's extreme inclusivity is tomorrow's normal pedagogical practice. For this participant, there is no 'neutral' position, for all positions are relative to changing and emerging possible 'realities'. Inclusivity is a possibility to be further realised by turning the exception into the norm. Neutrality, Left, and Right are abstract concepts that break down between reality and possibility. However, the epistemic neutralisation of the proposition is that is could be equally used by a participant advocating for change in a different direction. Though, perhaps equally absurd is the possibility of remaining epistemically neutral in all things. Arguably, epistemically sophisticated individuals can hold subjectively polarised positions, while acknowledging the possibility and place for opposing subjectivities. However, epistemically simplistic polarisations reflect an assimilative way of knowing with little allowance for transformative dialectic with new knowledge and experience.

Participants with the most polarised epistemic tendencies have often had the most polarising life-experiences. Participant responses reveal the strong relationship between life experience, teacher identity, and epistemic identity. Formative life experiences powerfully influence participants' identification with either the left or right binary. For example, one participant reflected on the inclusive-exclusive binary in

light of their rural upbringing: 'Coming from a small country town where I completed primary and secondary education, the focus on learning the dominant culture was strong. Moving to the city for university I was faced with culture shock' (Participant 19; Binary 3:2). Another participant reflected on the same binary in light of its application to special needs education:

> I feel strongly that some children are benefited more by individualised attention and attending separate special schools where they feel included rather than excluded or different. I probably hold this view after experiences and talking with my own mother who taught special education for a long time. (Participant 13; Binary 3:1)

One participant reflected on the nature-nurture binary in light of family member's experience: 'A family member was diagnosed with dyslexia at a young age, however, after rigorous practice of reading and writing encouraged by their mother he was able to overcome his genetic disability and become a poet' (Participant 10; Binary 2:1). Yet another participant reflected on the authoritarian-permissive binary in light of her previous experience:

> I do not value the authoritarian style of teaching where students must follow strict rules. I had a friend in primary school who was very timid and found it difficult to approach our Year Two teacher who was strict and used to scream at us. (Participant 10; Binary 5:1)

The strength of these identifications can influence the development of contextual and evaluative reasoning which requires the ability to hold individual subjectivities and abstracted objectivities (or inter-subjectivities) in tension.

A switch between binary polarisations over time (i.e., from left to right binary, or vice-versa) seems to represent a horizontal rather than a developmental epistemic movement. This was a rare occurrence in the study, with only five instances from four participants recorded across all binaries. Three of these switches occurred in the intrinsic-extrinsic binary construct. One participant who switched from exclusive to inclusive constructs wrote the following rationalisations during periods one and three, respectively:

> I believe that we should see each other as humans living in one world. We should celebrate differences but not to the point that we are separating people. Everyone has a background that should be valued, but too much focus on that can cause us to lose the 'big picture' view of the world. (Participant 15; Binary 3:1)

> I've chosen to switch to the inclusive binary now that I understand more about the topic. I want [sic] include many cultural experiences into the classroom, but in a way that brings everyone together. I understand that it may be harder to do in practice than in theory. (Participant 15; Binary 3:2)

The participant initially focussed more on the negative potential of the left binary – that inclusion through multiculturalism could inadvertently increase separation through over-emphasis on difference. The switch reflected a new emphasis on the positive potential of inclusion as a way of 'bringing people together'. This participant's movement reflects identity transitions between the binaries. Identity can be epistemically bound to one perspective until it is challenged to see and understand a different perspective. Arguably, an increasingly inter-subjective representation of different perspectives on the same binary construct prompts a movement towards contextual and evaluative epistemologies (or possibly more conflict).

An important lesson for teacher educators is not to assume a direct correlation between an individual's absolutism or polarisation and their capacity for epistemological sophistication. Rather, the strength of epistemological polarisation is closely related to the particular life-world of an individual. The journey towards relational and contextual reasoning is much longer for some than others, due more to the distance they have to travel than to the pace at which they progress. It may also be that the degree of past polarisation is related to the potential depth of future contextualisation. Teachers with epistemic depth may be those who have had to work hardest to see their own subjectivities in context in order to better understand and accommodate the opposing subjectivities of others. Arguably, the most epistemically sophisticated teachers are those who can most fluidly contextualise, decontextualise, and recontextualise their subjectivities.

Depolarisation. The central assumption of linear theories of epistemological development is that movement proceeds from dualistic to multiplistic to evaluativistic ways of knowing. Evaluativistic ways of

knowing are characterised by an awareness of context. This developmental dynamic was evident in participant reflections. For example, one participant reflected:

> Context is a big issue to change some of my thinking . . . now theorising that it all depends on other factors (subject, pupils, group dynamics) . . . both approaches are need to fit with certain situations, environments. (Participant 2: Binary 5:2-3).

A different participant also explicitly refers to an increasing appreciation of contextuality after the use of the BDG: 'My position moved towards the centre more as the old context chestnut came back into the issue . . . Depends on the context!' (Participant 12; Binary 5:2). Participants who explicitly recognised contextuality over time tended to de-polarise their positions. Participants with the least movement over time tended to have well developed understandings of contextuality in the initial period. For example, one participant told the researcher that she had spent much time reflecting on the nature-nurture binary during her previous science degree. In the initial period she reflected, 'These two "sides" [Nature and Nurture] appear to actually be cyclically related, making it impossible to say one is a greater influence than the other' (Participant 13; Binary 2:1). Predictably, she maintained her position over the duration of the study. Other participants reflected on the formative role of their research in the week following the focus groups: 'After research and further reflection, I believe it is possible to incorporate the two approaches in classrooms. However, before choosing the learning approach, the subject/context needs to be considered' (Participant 19; Binary 1:3). Collectively, these responses typify an epistemic effect (i.e., knowledge is increasingly seen as contextual) on the domains of teacher identity examined in this study.

There is evidence from this exploratory study that this epistemic appreciation of contextuality was fostered by the focus groups. The focus groups were structured using the BDG which foregrounds the epistemic issue (to accommodate or assimilate) by creating equal visual spaces for the representation of different values and perspectives. One participant notes, 'My position came closer to the neutral following the discussion. Mainly because of the discussions around context. The context of a situation will determine whether a child-centred or teacher-centred approach is employed' (Participant 12; Binary 1:2). Another

participant also noted the effect of the focus group in relation to the nature-nurture binary construct: 'Post-group session I became convinced that nature does have a role to play in hereditary intellectual capacity' (Participant 2; Binary 2:2). The focus groups work to expand participants' access to contents, experiences, and values associated with each binary construct. However, as participants encounter more contents, experiences, values and perspectives, they are faced with a cognitive choice between assimilation and accommodation. For example, one participant in the group who tended to emphasise the potentially negative effects of the right binary and the potentially positive effects of the left binary, indicated a student-centred preference overall during the initial period: 'An authoritarian approach can lead to non-interaction – rebellion, whereas a permissive approach can lead to greater interaction' (Participant 2; Binary 5:1). However, the participant then engaged with the life experiences of fellow focus-group members. Some of these members spoke of different experiences related to same binary. These participants shared formative life experiences that revealed some of the potential negatives that they associated with permissive approaches and the potential positives of authoritarian approaches. For example, one student expressed their frustration at being unable to learn in a class that took advantage of the teacher's permissiveness. Another student expressed their cultural discomfort at the relative permissiveness of some Australian classrooms. Over time and through inter-subjective sharing, the different dimensions of the binary are brought into focus. Participants must either reject or ignore the integrity of their fellow participants' experiences to maintain their own polarisations, or re-contextualise their own subjectivities to better account for the multiple subjectivities of their group. The latter scenario seems to account for Participant Two's response *after* the focus group.

> Context is a big issue to change some of my thinking . . . now theorizing that it all depends on other factors (subject, pupils, group dynamics) . . . both approaches are need to fit with certain situations, environments. (Participant 2: Binary 5:2-3)

Arguably, this is illustrative evidence of the development of more sophisticated epistemic structures to better account for multiple life-experiences and related perspectives. Participants with more relativistic epistemologies to begin with, tend to find it easier to accommodate diverse perspectives by contextualising

them. However, participants with initially oppositional or polarising epistemologies often find it difficult to maintain the integrity of perspectives that differ subjectively from their own. Similarly, those with multiplistic epistemologies may find it difficult to accommodate dichtomising epistemologies.

Neutralisation or Non-Polarisation. Participant responses revealed a range of relationships between left and right binaries. Arguably, some relationships (e.g., non-polarisation) reveal more sophisticated epistemologies than others (e.g., naïve polarisation). Non-polarising developmental relationships express the need for a chronological emphasis on one binary (i.e., nature or nurture) before the other. For example, one participant argued that extrinsic and intrinsic approaches to motivation are both valuable in-context, but that age-dependent contexts mean that extrinsic approaches are more appropriate at younger ages than intrinsic approaches:

> External motivations can often manifest into internal motivations . . . Extrinsic motivation is really important with younger children and intrinsic motivation is more important the older you get. Extrinsic at a young age helps to develop a sense of self worth and self-respect which are key to making the shift to intrinsic motivation and internalization which comes with more developed cognitive frameworks. (Participant 1; Binary 4:1-2)

Perhaps revealing a structuring principle, the same participant also adopted a developmental approach to the binary between authoritarian and permissive approaches: 'I believe that younger children (1 – 7 yrs) need boundaries defining. As they get older and understand the boundaries a 'permissive' approach becomes more feasible as the boundaries that are pushed are less risky' (Participant 1: Binary 5:1). A different participant took a developmental approach to teacher-centred and student-centred binary construct: 'I have never had to fully enforce a TCE style before. After hearing different sides of the spectrum I am now leaning more towards a neutral position with a directional focus leaning more towards a CCE outcome (Participant 17;

Binary 1:3). Developmental relationships reveal an awareness of context (i.e., age) that moves beyond simplistic oppositional relationships between left and right binaries[6].

Similarly, non-polarising complementary relationships tend to emphasise the need for both approaches (i.e., the left and right binary) to be valued in different contexts or for the development of different skills. For example, one participant noted that, 'Teacher-centred education is very important in order to teach content. Child-centred education is equally important to develop critical thinking and essential skills like interpersonal communication' (Participant 4; Binary 1:3). Another participant expressed a similar perspective for the same binary construct:

> Both orientations have their places in education and instead of being viewed as binary opposites it may be useful to think of how one can build on the other, e.g., TCE providing the basic foundations leading to CCE where students can explore and work with new understandings. (Participant 13; Binary 1:3)

Some participants demonstrated complementarity through a rejection of both binary extremes. For example, one participant argued, 'Both authoritarian and permissive methods of behaviour management are poor methods. One promotes control and oppression, whilst the other promotes anarchy' (Participant 4; Binary 5:3). This participant notes the negative complementarity of binary extremes. The tendency to reason about binary relationships using complementarity seems indicative of sophisticated epistemologies, where knowledge is seen as relational and contextual.

Some participants seemed to demonstrate an extra level of epistemic complexity in their reasoning about binary relationships. These participants used complementary epistemologies but also noted the relative interdependence of the left and right binary. For example, one participant reflected on the inclusive-exclusive binary construct: 'Inclusive: Exclusive. Can you have one without the other? You can be inclusively

[6] This is not to say that there cannot be sophisticated oppositional relationships between left and right binaries.

excluded or exclusively included' (Participant 1; Binary 3). Another participant reflected on the extrinsic-intrinsic binary construct, 'Some times it's hard to see if it's an internal or external reward . . . such a grey area, to one person it may be intrinsic whereas to the other it may be extrinsic' (Participant 3; Binary 4:2). For most participants, this realisation of relativity developed only in the final period after reflection, research and engagement with the BDG during focus groups:

> After reflection and some further reading I concluded that there is some irony to earlier debates of nature VERSUS nurture as the consensus now seems to be that both factors are highly relevant and interconnected to an extent that both may exert an influence on the other. (Participant 8; Binary 2:3)

Some participants noted an underlying relativism between 'realism and idealism' underlying all binary constructs. One participant reflected on the inclusion-exclusion binary as follows, 'Inclusion may be utopia but exclusion is reality' (Participant 11; Binary 3). This participant later indicated a dialectical rather than oppositional relationship between 'the real' and 'the ideal'. Other participants tended to privilege 'realism' over 'idealism' or vice-versa. Arguably, across contexts this position is less epistemically sophisticated than the first position.

Relative identification effect. Comparative analysis of participants' quantitative identifications and qualitative rationales revealed a relative identification effect in rare but significant cases. Relative identification effect relates to a demonstrable mismatch between an individual's self-identification relative to others, and their actual identification relative to others. The effect can be seen in qualitative responses and reveals some of the complexities of measuring and differentiating between simplistic and sophisticated epistemologies. For example, the following participant quantitatively identified with the strongest possible 'nurture' position in the 'nature-nurture' binary. However their qualitative reasoning was less polarised than some other participants who had identified with a more moderate or balanced position:

> Genetic and biological factors may impact upon a student's ability to learn in particular ways (for example, special needs scenarios), but generally cultural and environmental influences form / affect learning and behaviour. (Participant 9; Binary 2:2)

Possibly, this response reveals a relative identification effect such that the participant believes themselves to be 'relatively' left or right of the group consensus, while expressing a relatively balanced explanation when the cohort is examined as a whole. The effect may see some teachers self-identify differently with binaries depending on the measure used and/or their parameters of comparison.

Construct correlation. Finally, some participants explicitly noted the relationships between different binary constructs. The following student demonstrated the strongest correlation between 'left' binaries in the cohort. His responses demonstrate awareness of the structural similarity between different binaries. 'I now see ties between educational instruction TC [teacher-centred] or SC [student-centred] and motivation which I couldn't see before. I see self-motivation and autonomy as vitally important to students and thus put greater value in SC education' (Participant 18; Binary 1:3). Another participant also explicitly noted structural similarities between binary relationships in different constructs: 'Our discussion was very similar to our CCE / TCE talk we had yesterday. We determined that you have to establish a base you are then able to nurture' (Participant 17; Binary 2:2). The possible existence of correlations between binary constructs raises broader issues concerning the structural and cultural relationships between binaries. For example, one mature-aged participant reflected on the relative cultural change from exclusive to inclusive, extrinsic to intrinsic, authoritarian to permissive, and teacher-centred to student-centred approaches that he had witnessed during his lifetime. Indicatively, he noted 'Australia is following other Western nations in adopting an ideology of valuing diversity' (Participant 9; Binary 3:2). The participant's personal pedagogical identity reflected the broader transitions in the Australian milieu. As a child, he felt he had experienced the negative side of teacher-centred, authoritarian, exclusive, and extrinsic pedagogies. This participant's experience highlights the generational and cultural dynamics that interact with the epistemic dimension of teacher identity.

Discussion

This section offers some identification and elaboration of key considerations concerning the relationship between epistemic identity and teacher identity. Specifically, it discusses (1) the importance of epistemological development in the formation of teacher identity, (2) the possibility of facilitating

epistemological development through epistemic pedagogies, and (3) the end and continuity of epistemological development.

The importance of epistemological development. Teachers work in diverse and complex environments characterised by multiple discourses and overlapping contextual boundaries. The epistemic challenge for pre-service teachers preparing to work in such environments is to develop ways of knowing that can assimilate this complexity without unnecessary reduction or oversimplification. Naive epistemological polarisations (one size fits all) can limit teachers' repertoire of pedagogies. Epistemically polarising teachers can be mono-dimensionally authoritarian or permissive, inclusive or exclusive. Conversely, naive multiplicities (every size fits every thing) can immobilise teachers with an indefinite number of pedagogies haphazardly applied to all or any contexts. Such teachers use authoritarian or permissive, extrinsic or intrinsic approaches without regard to context. However, teachers who have evaluative epistemologies make pedagogical choices that are carefully aligned to contexts. They may also recognise their subjectivities and seek contexts that healthily expand or engage with these subjectivities. Is it possible to facilitate the development of such evaluativist and contextualist epistemologies?

Facilitating epistemological development. This pilot study represents a slice of time across a lifetime in the development of preservice teachers' identities. However, if teachers do develop epistemologically, they develop in relation to the accumulation and processing of life experiences. It is impossible to accurately measure the chaotic accumulation and formative value of life-experiences. However, formative teaching moments and experiences can and do occur. These moments probably represent a catalytic point of transition or change built on many other hidden accumulated experiences, but they are significant nonetheless. This study's use of focus groups structured with an implicitly epistemic tool (the BDG) represents *one* such catalyst for the epistemic development of *some* preservice teachers related to *some* domains of teacher identity. The fact that some participants developed, or became more aware of the relational and contextual nature of their pedagogical identities without explicit epistemological instruction, suggests that there is a place for epistemic events to help facilitate authentic epistemological development.

The end and continuity of epistemological development. This study also reveals the diversity of pedagogical identities across the five binary constructs. This diversity raises further questions about epistemological development. Do all teachers with evaluative epistemologies think the same? Are theories of epistemological development merely projects towards conformity and neutralisation? Are complex epistemologies ineffectively neutralising or ineffectively all-embracing of binary spectra? Such questions invoke the debate over the supremacy of relativistic epistemologies. Arguably, relativistic ways of knowing are not the 'absolute' end of an epistemic development, rather, they exist 'in relation' to absolutistic and positivistic epistemologies in a perennial dialectic that it seems humanly impossible to step outside. Complex epistemologies do not merely seek to naively objectify knowledge or extinguish different ways of knowing in the pursuit of a neutral or middle position, for neutral and middle positions only exist in the presence of opposites. Rather, complex epistemologies recognise that the implicit tensions and paradoxes between subjective and objective, real and ideal, a priori and a posteriori cannot be reduced or collapsed without loss of meaning and identity. Similarly, the pedagogical tensions and paradoxical relationships between teacher-centred and student-centred approaches, intrinsic and extrinsic motivations, inclusive and exclusive approaches, permissive and authoritarian approaches, and nature and nurture, can be embraced as navigational orientations in a sea of fluidity, rather than collapsed into a meaningless silence or chosen between once and for all. Epistemic complexity allows teachers to more clearly recognise their subjectivities and better navigate their fluid environments by recognising the subjectivities of others – their colleagues and students. Epistemic sophistication can perhaps reduce but not collapse the conflicts that arise when different contextual boundaries compete for the same space in the school environment.

Conclusion

The study of binary epistemic dynamics offers a rich field for future study. In the context of education, binary epistemics can offer an insight into the construction of teacher identities that are central to school and classroom environments. Binary epistemic pedagogies can offer ways of facilitating the development of more complex evaluative and contextual epistemologies. This exploratory pilot study has identified and

illustrated binary epistemic dynamics from preservice teacher identifications with five binary constructs including, (1) teacher-centred and student-centred approaches, (2) nature-based and nurture-based approaches, (3) inclusive and exclusive approaches, (4) intrinsic and extrinsic approaches, and (5) permissive and authoritarian approaches. The study revealed that the use of binary epistemic tools and pedagogies can catalyse awareness of the contextual and relational dynamics that characterise sophisticated epistemologies. Preservice teachers can change their identifications in short time periods punctuated by formative learning experiences. Furthermore, the study illustrated the range and complexity of binary epistemic dynamics interacting within and between participants' life-worlds. These dynamics invite further exploration with larger cohorts, with different binary constructs, and in different contexts. Finally, 'how' teachers know can never be separated from the study of 'what' and 'where' teachers know in space and time. In a milieu characterised by the paradoxically increasing flux and fixedness of boundaries, there is a place for epistemic studies and methodologies that both respect and cross traditional boundaries between qualitative and quantitative, and subjective and objective approaches to knowledge.

References

Borko, H., & Putnam, R. T. (1996). Learning to teach. In D. C. Berliner, & R. C. Calfee (Ed.), *Handbook of educational psychology* (pp. 673-708). New York: Macmillan.

Bendixen, L. D. and Feucht, F. C. (Eds.). (2010). *Personal epistemology in the classroom*. New York: Cambridge University Press.

Churchill, R. et al. (2011). *Teaching: Making a difference.* Milton, QLD: Wiley.

Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational research*, 67(1), 88-140.

Khine, M. S. (2008). *Knowing, knowledge and beliefs: Epistemological studies across diverse cultures*. Springer Science.

Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. New York: Holt, Rinehart and Winston.

Reich, K. H. (2002). *Developing the horizons of the mind: Relational and contextual reasoning and the resolution of cognitive conflict*. Cambridge: Cambridge University Press.

Schraw, G. J. & Olafson, L. J. (2008). Assessing teacher's epistemological and ontological worldviews. In M. S. Khine (ed.) *Knowing, knowledge and beliefs: Epistemological studies across diverse cultures* (25-44). Netherlands: Springer.

Tabak, I. & Weinstock, M. (2008). A sociocultural exploration of epistemological beliefs. In M. S. Khine (ed.) *Knowing, knowledge and beliefs: Epistemological studies across diverse cultures* (177-195). Netherlands: Springer.

Van Rossum, E. J. and Hamer, R. (2010). *The meaning of learning and knowing*. Rotterdam, Netherlands: Sense Publishers.

Appendix A: Binary Constructs for Teacher Identity

Table 1. Binary Constructs for Teacher Identity

Binary Construct	Left Binary	Right Binary
1	Student-Centred: Focuses on the student as the discoverer and creator of knowledge and the teacher as co-learner and facilitator of knowing.	Teacher-Centred: Focuses on the teacher as transmitter of expert knowledge and the child as recipient of knowledge.
2	Nurtured: Focuses on environmental influences on learning and behaviour.	Natural: Focuses on genetic and biological influences on individual learning and behaviour.
3	Inclusive: Focuses on the minority through active inclusion and celebration of difference.	Exclusive: Focuses on the majority through active exclusion and celebration of conformity.
4	Intrinsic: Focuses on internally generated task-satisfaction to motivate behaviour.	Extrinsic: Focuses on externally administered rewards and punishments to motivate behaviour.
5	Permissive: Focuses on freeing students from top-down power, rules, and organisation.	Authoritarian: Focuses on controlling students through top-down power, rules, and organisation.

Note. The left and right binaries were randomised in the study in order to avoid associative bias with 'left-wing' or 'right-wing' groupings. However, there is reason to believe that preservice teachers' individual identities and the identity of teaching in particular sociocultural contexts reflects this particular alignment.

Appendix B: Binary Differential Scale (BDS)

Left Binary			BINARY	***Right Binary***			RELEVANCE
3 Strong Identification	2 Moderate Identification	1 Weak Identification	Neutral Identification	1 Weak Identification	2 Moderate Identification	3 Strong Identification	None
			No Identification				Low
							Moderate
							High

Figure B.1 Binary Differential Scale (BDS): Quantitative Identification. The BDS is an interval scale for the identification of binary relationships and the domain-specific relevance of binary constructs. The BDS allows for multiple identifications and non-identifications.

Left Binary	BINARY	***Right Binary***	PERIOD
Position Reflection: Why have you identified this position and what formative experiences have influenced your position?			

Figure B.2 Binary Differential Scale (BDS): Qualitative Identification. The BDS can be administered to collect qualitative data offering complementary reflections and reasoning on the quantitative position. This is especially applicable to smaller case studies and longitudinal studies examining epistemic trajectories and dynamics over time.

Appendix C: Binary Differential Grid (BDG)

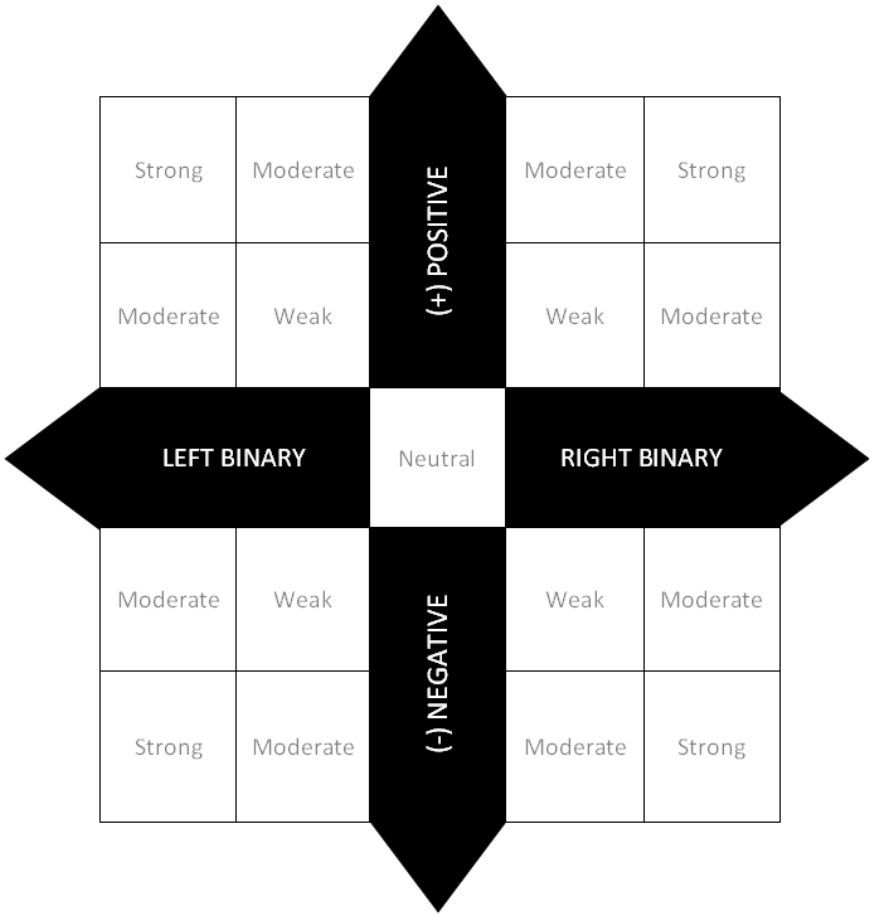

Figure C1. Binary Differential Grid (BDG): Sample Template. The Binary Differential Grid (BDG) is a pedagogical tool to facilitate epistemological development from simplistic dualisms to contextualised understandings. Participants identify and record formative experiences, evidence, and attitudes in relation to a binary pair in order to explore (1) the complexity of relationships between binaries, (2) the relativity and contextuality of binaries, (3) the diverse experiences that produce identity in relation to particular binary, and (4) the role of structure in the organisation of experience and the expression of identity.

EVERYDAY LIFE AT THE LEISURE-TIME CENTRE

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Abstract: *In this article I present insights from research that has sought to deepen the perception of recreation leaders regarding leisure-time centres for young people (aged 6-12) and the contributions of these centres to the development and learning of children. Based on the research I argue that the relationship between entrepreneurship education and citizenship education is a close one, and it is possible for one to lend itself to the other and strengthen the development of an individual's skills for inclusion in society. In the first part of the paper I introduce the concept of the leisure-time centre and its connection to the Education Act and the curriculum for elementary school, preschool, and after-school. In the next two sections I describe the theoretical framework for entrepreneurship education and citizenship education. In the fourth part I present the research. In the fifth part I discuss and analyse the findings of the research.*
Keywords: Leisure-time Centre, Entrepreneurship Education, Citizenship Education

Introduction

In Sweden the leisure-time centre is a pedagogical group activity for Swedish school children up to twelve years of age. Children attending leisure-time centres are enrolled at the centres. Activities at the centres can be run as free-standing group activities, but usually in varying degrees, these activities are integrated with preschool class and compulsory education. Approximately 80% of all children in Sweden between the ages of six and nine, and approximately 10% of all children between the ages of ten and twelve are enrolled in leisure-time centres (Skolverket, 2011).

The curriculum for compulsory school, preschool class, and the leisure-time centre (henceforth, the Curriculum; LGR, 11) states that pedagogical group activities at the leisure-time centres should rest on a democratic foundation, which means that training should provide and establish respect for human rights and the fundamental democratic values on which Swedish society is based. Everyone working at leisure-time centres or with leisure activities at school should promote respect for every human being and respect for our common environment (Skolverket, 2011).

In the Curriculum (LGR, 11) are several values that Swedish schools and leisure-time centres should represent and impart. These values are the inviolability of human life, individual freedom and privacy, the equal value of all people, gender equality between male and female, and solidarity with the weak and the

vulnerable. In accordance with ethics, and managed by Christian tradition and Western humanism, these values should be actualized by fostering a sense of justice, generosity, tolerance, and responsibility in individuals. Furthermore, the Curriculum (LGR, 11) states that the activities must be non-denominational (Skolverket, 2011).

The Education Act (2010:800) states that leisure-time centres should supplement education in preschool and elementary school and that such leisure-time centres should promote all-around relations and social community (Education Act, 2010:800). Activities at leisure-time centres should encourage the development and learning of children and provide them with meaningful leisure and recreation. Furthermore, education at leisure-time centres should be based on a holistic view that promotes/prioritizes the child and the child's needs. According to the National Agency for Education, the activities at leisure-time centres and the leisure activities at school should provide children with good care, meaningful leisure, and support in their development (Skolverket, 2010).

In accordance with the policy instruments, activities at leisure-time centres should be designed so that each child's needs are met, each child's interests are nurtured, and each child gets the most out of his or her experiences. As children are seen as active co-creators, they must have space for their curiosity and their desire to learn. As co-creators they also must have influence over how activities are formed. The policy documents clearly state that each child should be supported in expressing his or her thoughts and in joining in and taking responsibility.

The extent of the research in and about leisure-time centres is small compared with that, for example, concerning Swedish schools. New knowledge in the field is developed mostly through theses published in universities, which have examination right to education leisure activities being implemented at leisure-time centres. Besides this, only a few individual theses and scientific papers have been produced over the years. Between 1980 and 1999 twelve essays were written in the subject of leisure education. From 2001 to 2007, out of 447 essays in the educational area, five focused on youth leisure centres (www.forskning.se).

The purpose of this article is, firstly, to show the perception of recreation leaders regarding what abilities children enrolled in leisure-time centres can develop by participating in the activities of such centres. Secondly, the paper seeks to highlight, explore, and illuminate the staff's perception of what leisure-time centre activities can contribute toward the development and learning of children enrolled in such centres. We use a theoretical framework with theories of entrepreneurship education and citizenship education. For example, Davies, Fülöp, Hutchings, Ross, and Berklies (2004) claim there is no necessary

reason why linkages between entrepreneurship and citizenship cannot be made. Furthermore, democracy in itself can be an expression of democratic action.

Methodology

This study used an attitude survey questionnaire (see appendix). A letter with instructions and a presentation of the research followed the questionnaire. Before the questionnaire was sent out it was piloted at three leisure-time centres, and both reliability and validity were found to be satisfactory. The survey instrument, which involved 39 statements, was sent to all 13 municipalities in the county of Norrbotten in northern Sweden, comprising a total of 146 leisure-time centres. The questionnaire was distributed to professionals and other personnel working with children enrolled in leisure-time centres. A total of 164 professionals answered the questionnaire, and in the material leisure-time centres from all municipalities are represented. No respondent answered all the questions in the questionnaire. A 5-point Likert scale scored from 1 (strongly disagree) to 5 (strongly agree) was used. The respondents were reminded twice through e-mail to answer the questionnaire. A questionnaire was used so as to reach as many leisure-time centres as possible.

The assertions that recreation leaders had to consider was divided according to the following themes: motivation, responsibility, cooperation, leadership, communication, curiosity, creativity, initiative, self-image, and self-confidence. Respondents were asked to indicate whether it was possible for children enrolled in leisure-time centres to develop their own inner motility, their ability to take responsibility, the ability to work with others and to listen to others, the ability to lead an activity, their creativity and curiosity, and the ability to generate new ideas. Respondents had also to indicate whether children could develop their self-esteem, self-confidence, and self-image. Finally, respondents were asked whether the children could develop their ability to see new possibilities.

The rest of this paper is organized as follows. The second section presents theories on entrepreneurship education, followed by theories on citizenship education in the third section. The fourth section presents the results of the study. In the last section, useful tools for future study are analysed and some conclusions are drawn.

Entrepreneurship education

Matlay (2008) states that entrepreneurship education has expanded significantly in most industrialized countries due to a widespread governmental belief in the positive impact that entrepreneurship can have on the socioeconomic and political infrastructure of a nation. Involving compulsory schools in the entrepreneurship education process is seen as an important objective for several reasons. Young children tend to display an entrepreneurial attitude in everyday life. They are usually very creative, straightforward, and unconcerned about the potential risks inherent in their actions. Fuchs, Werner, and Wallau (2008) assert that the innate entrepreneurial attitude of younger children must be preserved. Furthermore, they consider it crucial to encourage entrepreneurial behaviour as early as possible.

The European Union has identified entrepreneurship and enterprise as among the key competences in our future society (Martinsson, 2009). For decades now the Organization for Economic Cooperation and Development has been highlighting the importance of an entrepreneurial society. Although most European countries have a policy commitment towards promoting entrepreneurship education (European Commission, 2006), some critical voices are also heard among researchers. Korhonen, Komulainen, and Räty (2011) claim their position as critical following the theoretical ideas of Foucault (1991). In their research they explore how a group of Finnish comprehensive school teachers in six schools constructed the meaning of entrepreneurship education and produced related characterizations of the abilities of pupils in their interviews. In their discussions, the teachers deployed the discourses of “internal entrepreneurship” and “external entrepreneurship”. The conceptual formulations could be compared with entrepreneurship education of general enterprising attitudes and skills, and with training the students about how to create business (See Leffler, 2009). In one of the six schools entrepreneurship was strongly present as an all-inclusive ideology characterizing the daily practices of teaching and learning. The school had an extensive repertoire of entrepreneurial projects, such as visits, events, and contests embedded in everyday schoolwork. In their conclusions Korhonen, Komulainen, and Räty (2011) approach entrepreneurship education as a process created through governance, not as an implicitly neutral and desirable goal of education. They argue that the teachers in their research characterized the pupils’ entrepreneurial potential by naming abilities such as creativity, innovativeness, and risk-taking as reflecting the neoliberal ideal of enterprising and entrepreneurial citizens, as well as the essential for the neoliberal governance of the self as a marketable product.

Deuchar (2004) discusses the English National Curriculum model and its recommendations as seen from a Scottish perspective. The published recommendation suggests that enterprise activities may contribute towards the expression of key attributes for effective citizenship. Deuchar (2004) believes that young people should possess personal qualities such as self-esteem, self-confidence, initiative, determination, and emotional maturity in order to develop generic skills such as the ability to work independently and in collaboration with others. Deuchar (2004) argues that there is a relationship between enterprise and citizenship education. The capacity of young people to think and act creatively and to be enterprising in their approach to solving a problem or resolving an issue may allow expression of the key ingredients of citizenship capability.

Seikkula-Leino (2011) argues that entrepreneurship education requires a shift in pedagogy. In addition, the pedagogy of entrepreneurship education is focused on young people being active in learning. The learning situations are flexible and interactive, and activities that encourage the students' interactive learning and reflections are identified: co-operative learning, problem-based learning, group and peer work, project and team work, learning by doing, pedagogical drama, and learning diaries. Similarly, Gibb (2002; 2005) claims that knowledge is built together with the participants, and mistakes are regarded as a part of the learning process. Gibb (2002) furthermore claims that a number of supporting attributes, such as motivation to learn, self-confidence, self-belief, and creativity, are important for the personal development of young people.

According to Heinonen and Poikkijoki (2006), the special challenge of entrepreneurship education lies in facilitating learning to support the entrepreneurial process. Shane and Venkataraman (2000) claim that entrepreneurship depends on particular opportunities, the processes of discovery, evaluation, and exploitation of those opportunities, and the mindset of individuals who discover, evaluate, and exploit them. Eckhard and Shane (2003) also focus on a deeper understanding of opportunities in the entrepreneurial process. Chell and Athayde (2009) argue that the skills for innovation, such as imagination, creativity, curiosity, enthusiasm, and talent, are often equated with the skills required for entrepreneurship. Imagination is meant here as the ability to envision the development of an idea into the future, and creativity subsumes the ability to connect ideas, and to tackle and solve problems.

In Sweden entrepreneurship education has been formally introduced into the educational system as a matter of a national policy**.** In the first chapter of the Curriculum (LGR, 11), it is clearly stated in the school's values and mission that an important task for schools is to provide an overview and context. Furthermore, schools should encourage the students' creativity, curiosity, self-confidence, and willingness to test ideas and solve problems. Students should be able to take initiative and responsibility and to develop their ability to work independently and together with others at the leisure-time centre. Schools

should thereby contribute to the development of a student's approach that promotes entrepreneurship (Skolverket, 2011).

From the literature review of this article one can see that characteristics such as self-efficacy, self-belief, self-assurance, self-awareness, and feelings of empowerment have gained momentum in the entrepreneurship literature as crucial personal attributes of people who recognize and exploit opportunities.

This article targets the perception of recreation leaders regarding the contribution that the activities at youth leisure centres can make to their children's development and learning. An interesting question is whether the staff working at leisure-time centres can provide children with opportunities.

Citizenship education

A citizen may be described as a member of a political community or a state, who has certain legal, social, and moral rights, duties, and responsibilities. Citizenship is a political concept with a variety of rights and responsibilities in a given political community. These rights and responsibilities change over time as the result of social struggle, economic change, and shifts in governing ideology. The idea of citizenship is built on people's equal value and equal opportunity to take part in and influence public activities. Even though citizenship can mean different things in different nations, it has a broader sociological and historical meaning that is universal (cf. Petersson, Hermansson, Micheletti, Teorell, & Westholm, 1998). Ingelhart (1997) and Giddens (1991) state that young citizens participate in society with "self actualizing" or "self-reflexive" involvements in personally meaningful causes guided by their own lifestyles and shifting social networks. A portfolio of skills for citizenship has been identified; it includes the ability to show mutual respect for others, the social awareness to be able to take self-responsibility, and good self-confidence and good self-worth (Hall, Williamson, and Coffey, 2000). Arnot and Dillabough (2000**)** argue that an important aspect of schooling is the production of citizenship. Citizenship is not just about what young people learn; it is also about how they learn. Lawy and Biesta (2010) argue that young people learn to be citizens as a consequence of their participation in the actual practices that make up their lives. Young people participate in a range of different practices, such as those involving the family, school peers, and leisure. These practices provide qualitatively different opportunities for action, and hence qualitatively different opportunities for learning from action, which means that young people have a voice and are seen as participants. Lawy and Biesta (2010) claim that citizenship as practice enables an understanding of the dynamics of citizenship learning that is related to the real lives of young people.

Around the world many governments have chosen to develop programmes for citizenship education and learning focused on the school sector. The schools' focus on programmes for citizenship education might be underpinned by the belief that young people are perhaps the most in need of citizenship

education. It has also been argued that citizenship education should be seen as a part of young people's decreasing interest in political parties and other associations of thought, the occurrence of anarchistic youth revolts, and the spread of fascistic ideas among the young generation (Lindström, 2009). Sandström Kjellin and Stier (2008) argue that European educational systems are challenged by increasing social and ethical diversity – something that, in turn, demands new teacher competences. Ross (2010) asks how pre-schools, schools, and colleges disseminate the ideas of citizenship to their pupils and learners, and argues for a ground for young people to explore what citizenship means in an active and participatory manner. He claims that teaching active citizenship is learning citizenship through participation in the understanding and the extension of rights. Furthermore, citizenship education might use the exploration of contested rights as a way of developing practical enactive skills of citizenship. However, Lawy and Biesta (2010) have found that learning in school and college is not always or necessarily associated with a positive experience of citizenship or citizenship education, and that it raises questions about the extent to which citizenship learning is context bound or person bound.

The Swedish school system is a goal-based system with a high degree of local responsibility. The main responsibility for educational activities lies with the municipalities and authorities responsible for independent schools. Various steering documents, such as the school curriculum and course syllabi, are drawn up at different levels within the school system to guide activities. In Sweden citizenship is not a formal subject. Citizenship education and the teaching of formal citizenship are related to different subjects such as civics. It is everyone's responsibility, however, to work within the values and mission of the Swedish school system.

The school system is based on democracy. The Curriculum (LGR, 11) stipulates that the schools' mission is to encourage all pupils' unique individuality, thus enabling them to participate in society by giving their best in responsible freedom.

Schools should promote an understanding of other people and the ability to empathize. The internationalization of Swedish society and the growing movement across borders put high demands on the ability of people to live with and appreciate the values inherent in cultural diversity. The school is both a social and a cultural meeting place, and both milieus present an opportunity and a responsibility to strengthen the ability of everyone who works there.

The Education Act stipulates that education, within each type of school and in the leisure-time centre, should be equal, regardless of where in the country it is provided. The school shall also encourage

equal rights and opportunities between women and men. Thus, children at leisure-time centres should be allowed to test and develop their abilities and interests irrespective of sex. The Curriculum (LGR, 11) states that it is not sufficient for education to impart knowledge of fundamental democratic values; teaching should also be conducted in democratic way and should prepare children to actively participate in society. Children's stay at the leisure-time centre should develop their ability to take personal responsibility. By participating in the planning and evaluation of daily activities and in the choosing of these activities, topics, and themes, children can develop their ability to exercise influence and take responsibility (National Agency for Education, 2010; Skolverket, 2011).

Biesta, Lawy, and Kelly (2009) and Biesta and Lawy (2006) argue that young people's citizenship learning is not just a cognitive function; rather, it is a process that is situated, related, and uniquely linked to the individual life-trajectories of young people. Furthermore, citizenship education should focus on young people in context and on the social, economic, cultural, and political contexts in which they live. Banks (2001) states that citizenship education must be changed in substantial ways to prepare young people to function in the 21st century. Citizens in the new century need the knowledge, attitudes, and skills required to function in a global community.

Biesta, Lawy, and Kelly (2009) claim that factors that provide young people with opportunities and experiences are crucial to the process of citizenship learning. These factors of importance are for the young to have a say, to be taken seriously, and to have influence.

Fiehn (2007) similarly argues that citizenship education is an important part of the development of young people. By enabling them to learn about their rights and responsibilities, to understand how society works, citizenship education prepares young people to deal with the challenges they face in life and to learn and practice new skills. Through citizenship education young people are encouraged and given opportunities to take action on issues that are of concern to them. Experiences expressed by young people themselves means to be listened to, to have a voice, to gain new skills, to be a part of a team, and to have possibilities of getting involved in the community. Print (2007) states clearly that when it comes to citizenship education, of all the options available for young people to learn about participation in democracy, the most strongly favoured and advocated is the school.

What abilities can children enrolled in youth leisure centres develop?

This part of the article shows the results of the survey. The results in their totality will be discussed in the next section. The results are presented in 15 histograms representing the answers to 15 of the 39 statements. The results on all statements can be found in the appendix, presented as a profile of the results. This section is structured under the following themes: motivation, responsibility, cooperation, leadership, communication, curiosity, creativity, initiative, self-image, and self-confidence. The questions are chosen from theories of citizenship and entrepreneurship central to the aim and research questions.

Motivation

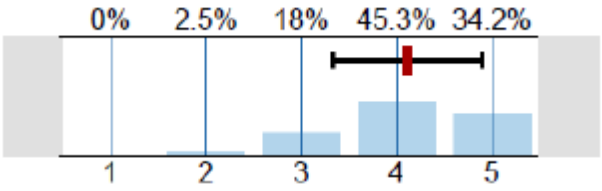


Figure 1. Children can develop their inner forcing.

N=158

Nearly half of the respondents (45.3%) partly agree with the statement that children can develop their inner forcing.

Responsibility

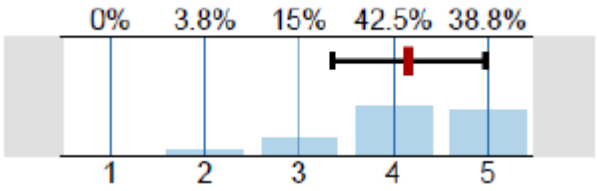


Figure 2. Children can develop their ability to have responsibility.

N=159

Many of the respondents (81.3%) partly or strongly agree with the statement that children can develop their ability to have responsibility.

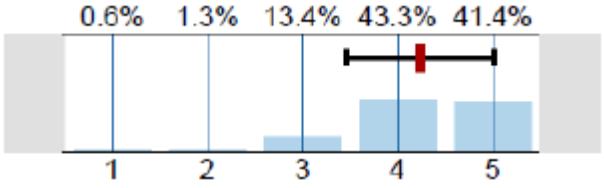


Figure 3. Children can develop their ability to take responsibility.

N=154

Many of the respondents (84.7%) partly or strongly agree with the statement that children can develop their ability to take responsibility.

Cooperation

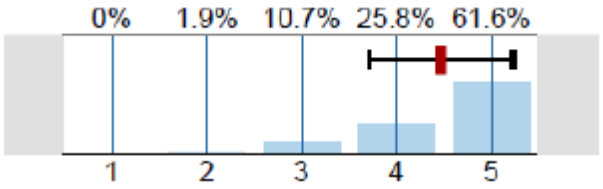


Figure 4. Children can develop their ability to collaborate with others within the organization.
N=159

Majority of the respondents (61.6%) strongly agree with the statement that children can develop their ability to collaborate with others within the organization.

Leadership

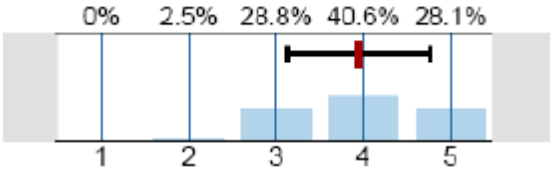


Figure 5. Children can develop their leadership.

N=159

Majority of the respondents (68.7%) partly or strongly agree with the statement that children can develop their leadership.

Communication

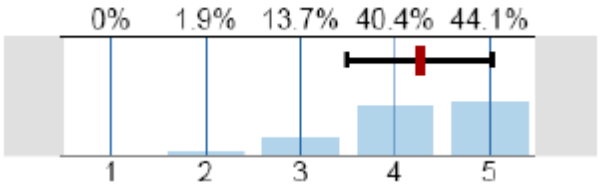


Figure 6. Children can develop their ability to listen to others.

N=159

Many of the respondents (84.5%) partly or strongly agree with the statement that children can develop their ability to listen to others.

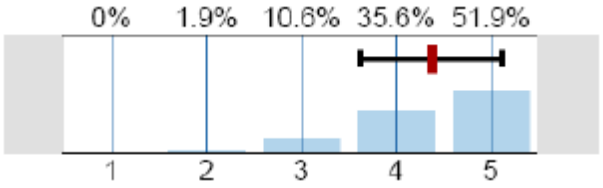


Figure 7. Children can develop their ability to carry on a conversation with others.

N=160

A little more than half of the respondents (51.9%) strongly agree with the statement that children can develop their ability to carry on a conversation with others.

Curiosity

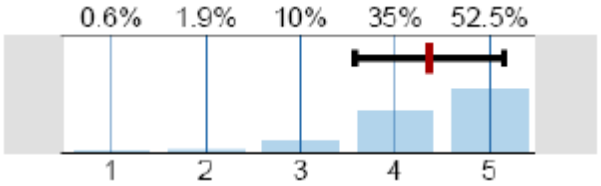


Figure 8. Children can develop their curiosity.

N=156

A little more than half of the respondents (52.5%) totally agree with the statement that children can develop their curiosity.

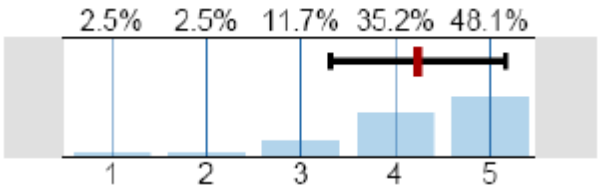


Figure 9. Children can develop their imagination.

N=160

Many of the respondents (83.3%) partly or totally agree with the statement that children can develop their imagination.

Creativity

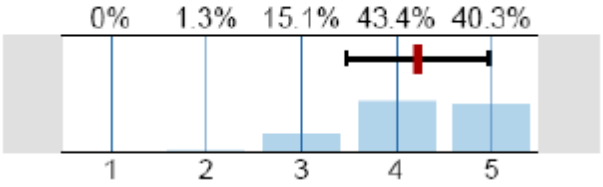


Figure 10. Children can develop their ability to see opportunities and solutions instead of problems.

N=157

Many of the respondents (83.7%) agree, partly agree, or strongly agree with the statement that children can develop their ability to see opportunities and solutions instead of problems.

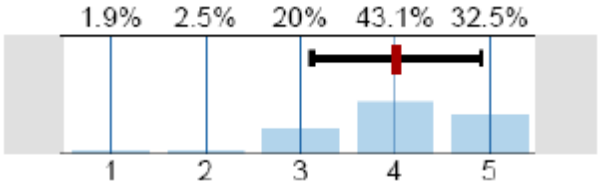


Figure 11. Children can develop their ability to see possibilities.

N=158

Three quarters of the respondents (75.6%) partly or totally agree with the statement that children can develop their ability to see possibilities.

Initiative

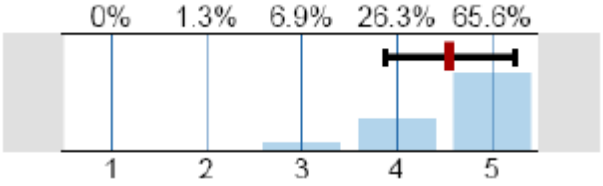


Figure 12. Children can develop the ability to play.

N=158

Majority of the respondents (65.6%) strongly agree with the statement that children can develop their ability to play.

Self-image and self-confidence

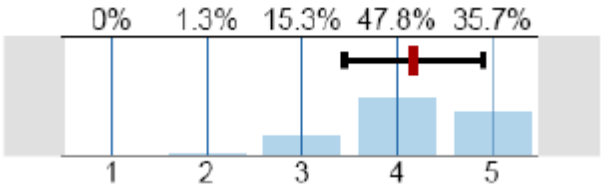


Figure 13. Children can develop their self-esteem.

N=158

Close to half of the respondents (47.8%) partly agree with the statement that children can develop their self-esteem.

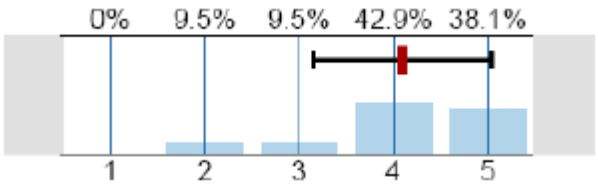


Figure 14. Children can develop their self confidence

N=157

Roughly two-fifths of the respondents (42.9%) partly agree with the statement that children can develop their self confidence.

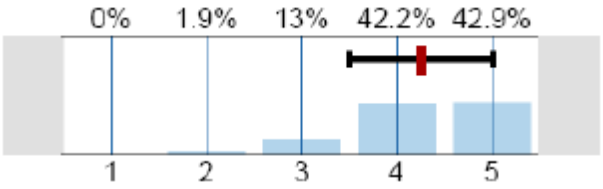


Figure 15. Children can develop their independence.

N=157

Many of the respondents agree with the statement that children can develop their independence, with 42.2% in partial agreement and 42.9% in total agreement.

Entrepreneurship and citizenship: Useful tools for the future

The purpose of this article is, firstly, to show what abilities children enrolled in leisure-time centres can develop through participation in centre activities, as perceived by recreation leaders. Secondly, the paper aims to highlight, explore, and illuminate the staff's perception of what leisure-time centre activities can contribute toward the development and learning of the children. As a theoretical framework, theories of entrepreneurship education and citizenship education are used.

The research as a whole gives many interesting answers to the purpose of the study. The study consistently shows that the respondents generally agree with all the claims presented in the survey. However, there are a few areas where respondents are more hesitant. There are allegations that children can develop their ability to express themselves in dance and drama, that children can develop their ability to collaborate with others outside the leisure-time centre, and that they can develop their ability to understand the world outside the leisure-time centres (see appendix).

The research finds that the contribution of recreation leaders and other staff in schools and the leisure-time centres to the development of children is to enable young people to learn, to use, or to acquire what could be called a portfolio of citizenship and entrepreneurial skills and dispositions.

The allegations in the survey cover the central concepts of entrepreneurship education and citizenship education. The core of both theories includes personal skills and qualities such as motivation, learning, social awareness, and the development of self-confidence, self-responsibility, and creativity. All these conceptions were included in the statements of the questionnaire.

One will notice that children at leisure-time centres are encouraged and given opportunities to take action on issues that are of concern to them. Seikkula-Leino (2011) argues that the pedagogy of entrepreneurship education is focused on young people's active learning. The research shows that children at leisure-time centres are perceived as being capable of active learning. Central for children and of great significance to their development are the activities and the environment at the leisure-time centres, and the importance for child development of being able to play is indisputable. Majority of the respondents (61.6%) agree with the statement that children can develop their ability to collaborate with others within the leisure-time centre.

Important factors in helping young people develop as citizens are their feeling motivated and their having the opportunity for ownership. Almost 80% of the respondents agree with the statement that children can develop their inner forcing and more than 80% of the respondents partly or strongly agree with the statement that children can develop their ability to have responsibility. Among the respondents, 84.7% partly or strongly agree with the statement that children can develop their ability to take responsibility. In the policy documents for the leisure-time centre it is clearly stated that each child should be supported in expressing his or her thoughts and in joining in and taking responsibility. This study cannot tell, however, whether they also have influence over how activities can be formed.

Communication between children and recreation leaders is an important part of the activities at leisure-time centres, as is the ability of children to lead other children in play and in other activities. Thus, children need to feel confident in their own abilities and in their communication with adults. The survey showed that 68.7% of respondents partly or strongly agree with the statement that children can develop their leadership within the leisure-time centre. Many of the respondents (98.4%) partly or strongly agree with the statement that children can develop their ability to build trust with other children.

Gibb (2002) talks about learning as a social and developmental process that can take place outside an organized and structured context and about the capacity to learn from different sources. Individuals can learn from their mistakes, by doing, by coping, by experiment, and by grasping opportunity. Furthermore, there are a number of supporting attributes for learning, such as the motivation to learn, a developed self-confidence and self-belief, curiosity, and the ability to take initiative and to be creative.

This research shows that recreation leaders provide children at the leisure-time centres with a lot of opportunities. The children are more like co-creators, and it seems that children at the centres have space for their curiosity and imagination as well as for their desire to learn.

The survey strongly indicates that children at leisure-time centres can develop a number of entrepreneurial skills: 52.5% of the respondents strongly agree with the statement that children can develop their curiosity, 48.1% with the statement that children can develop their imagination, and 29.6 % with the statement that children can develop their consciousness about their talents.

Thompson (1999) talks about the importance of entrepreneurs who show initiative, who are willing to think conceptually, and who see change as an opportunity. In this research the respondents were asked if children can develop their ability to see opportunities and solutions instead of problems and if they can develop their ability to see possibilities. The research shows that 83.7% of the respondents partly or strongly agree with the statement that children can develop their ability to see opportunities and solutions

instead of problems, and 75.6% partly or strongly agree with the statement that children can develop their ability to see possibilities. The ability to take initiative is another conception with a strong connection to entrepreneurship education. In this research recreation leaders were asked to respond regarding the children's ability to develop the ability to play, and 65.6 % of the respondents strongly agreed.

To conclude, some equality regarding crucial personal attributes are found in the theories of entrepreneurship and citizenship. The skills required for entrepreneurship and for the development of young people's citizenship are characteristic "self" emotion skills, such as developed self-efficacy, self-belief, self-assurance, self-awareness, self-esteem, self-confidence, and independence. Those skills are central in both theories. In this research respondents were asked about the possibility of children developing their personal skills such as their self-esteem, self-confidence, and independence while enrolled in leisure-time centres. The survey showed that 83.5% of the respondents partly or strongly agreed with the statement that children can develop their self-esteem, 81.0% with the statement that children can develop their self-confidence, and finally 85.1% with the statement that children can develop their independence.

From the research it may be argued that children enrolled in leisure-time centres have good possibilities of fulfilling the goals and ambitions indicated in the steering documents of the Swedish system. This research indicates a shift in pedagogy focused on children as being active in learning. From the research children seem to have the potential to be part of the processes at leisure-time centres and to develop their entrepreneurial skills. Fuchs, Werner, and Wallau (2008) claim that younger children tend to display an entrepreneurial attitude in everything they do and that young people are usually very creative, straightforward, and unconcerned with the potential risks inherent in their actions. In this research the children enrolled in leisure-time centres seem to be capable of developing those skills, and therefore it would be desirable to encourage entrepreneurial behaviour early in compulsory school. Sarasvathy and Venkatarman (2011) claim that entrepreneurship may be a social force akin to democracy; based on this they hold that entrepreneurship is a tool for changing society for the better, which everyone should have the right to embrace.

The relationship between enterprise education and citizenship education is a close one. Research shows that it is fruitful to combine the theoretical perspectives of citizenship and entrepreneurship. It is clear from the results of this research that both citizenship education and entrepreneurship education can contribute to the personal development of young people (aged 6-12) enrolled in leisure-time centres. A contribution with a longitudinal perspective could be helpful in deepening young citizens' perception of being citizens. The results also show that young people enrolled at leisure-time centres can adopt an

entrepreneurial approach**.** Following Sarasvathy and Venkatarman (2011), arguing for entrepreneurship as a method and a social force comparable to democracy would make unnecessary the claims such as those from Korhonen, Komulainen, and Räty (2011) and Biesta and Lawy and Biesta (2010). Democracy in itself may be seen as a result of enterprising action (Davies et al., 2004).

Of course it is possible to be critical of the positive responses that the recreation leaders gave to the statements in the questionnaire. One critical argument would be that recreation leaders automatically answer in positive terms regarding the outcomes of their job and profession. However, as the respondents came from different leisure-time centres there does not seem to be any systematic bias. Given that this is an exploratory study, I find the responses satisfactory for analysis, but I would also suggest follow-up studies that would show whether students at leisure-time centres develop their entrepreneurial skills and adopt an entrepreneurial approach in the long term.

References

Arnot, M., & Dillabough, J. (Eds) (2000). Challenging democracy: international perspectives on gender, education and citizenship. London: Routledge.

Banks, J. A. (2001). Citizenship education and diversity: Implications for teacher education. Journal of teacher Education, 52: 5.

Biesta, G., & Lawy, R. (2006, March). From teaching citizenship to learning democracy: overcoming individualism in research, policy and practice. Cambridge Journal of Education, 36(1), 63-79.

Biesta, G., Lawy, R., & Kelly, N. (2009). Understanding young people's citizenship learning in everyday life: The role of contexts, relationships and dispositions. Education, Citizenship and Social Justice, 4(1), 5-24.

Chell, E. & Athayde, R. (2009). The identification and measurement of innovative characteristics of young people. Development of the Youth Innovation Skills Measurement. NESTA Making Innovation Flourish. Research report. Kingston: Kingston University.

Colardyn, D., & Bjornvold, J. (2004). Validation of formal, non-formal and informal

Davies, I., Fulöp, M., Hutchings, M., Ross, A. & Berkies, M. (2004). Citizenship and enterprise: Issues from an investigation of teachers' perceptions in England and Hungary. Comparative Education, 40(3), 363-384.

Den svenska forskningsportalen. (2011). Vilken forskning finns det om fritidshem? (www.forskning.se). Online 2011-09-15. [The Swedish research portal. (2011). What research there is on youth leisure centre?].

Deuchar, R. (2004). Changing paradigms: The potential of enterprise education as an adequate vehicle for promoting and enhancing education for active and responsible citizenship. Oxford Review of Education, 30(2), 223-239.

Eckhardt, J. T., & Shane, S. A. (2003). Opportunities and entrepreneurship. Journal of Management, 29(3), 333-349. Pergamon: Elsevier Science Inch.

European Commission. (2006). Entrepreneurship action plan. Key action sheets. Key action fostering entrepreneurial mindsets through school education. Retrieved November 12, 2009, from http://ec.europa.eu/enterprise/entrepreneurship/action_plan/index.htm

Fiehn, J. (2007). Post-16 citizenship in school sixth forms: An introduction to effective practice. London: Quality Improvement Agency.

Foucault, M. (1991). Governmentality. In G. Burchell, C. Gordon, & P. Miller (Eds.), The Foucault effect. Studies in governmentality with two lectures and an interview with Michel Foucault (pp. 87-104). London: Harvester Wheatsheaf.

Fuchs, K., Werner, A., & Wallau, F. (2008). Entrepreneurship education in Germany and Sweden. What role do different school systems play? Journal Small Business and Enterprise Development, 25(2), 365-381.

Gibb, A. (2002). In pursuit of a new enterprise and entrepreneurship paradigm for learning: Creative destruction, new values, new ways of doing things and new combinations of knowledge. International Journal of Management Reviews, 4(3), 233-269.

Gibb, A. (2005). The future of entrepreneurship education. Determining the basis for coherent policy and practice. In Kyrö, P, & Carrier, C. (eds). The dynamics of learning entrepreneurship in a cross cultural university context. Entrepreneurship Education Series 2:2005 (pp. 44-68). Finland: University of Tampere Research Centre for Vocational and Professional Education.

Giddens, A. (1991). Modernity and self-identity: Self and society in the late modern age. Cambridge: Polity Press.

Hall, T., Williamson, H., & Coffey, A. (2000). Young people, citizenship and the third way: A role for the Youth Service? Journal of Youth Studies, 3(4), 461-472.

Heinonen, J., & Poikkijoki, S-A. (2006). An entrepreneurial-directed approach to entrepreneurship education: mission impossible? Journal of Management Development, 25(1), 80-94.

Inglehart, R. (1997). Modernization and postmodernization: Cultural, economic, and political in 43 societies. Princeton, N.J.: Princeton University Press.

Korhonen, M., Komulainen K., & Räty, H. (2011). “Not everyone is cut out to be the entrepreneur type”: How Finnish school teachers construct the meaning of entrepreneurship education and the related abilities of the pupils. Scandinavian Journal of Educational Research, DOI:10.1080/00313831.2011.567393

Lawy, R., & Biesta, G. (2010). Citizenship-as-practice: The educational implications of an inclusive and relational understanding of citizenship. British Journal of Educational Studies, 54(1), 34-50.

Leffler, E. (2009). The many faces of entrepreneurship: A discursive battle for the school arena. European Educational Research Journal, 8(1), 104-116.

Lindström, L. (2009). Leisure activities and youth citizenship: What local councils tell about youths leisure from the perspective of citizenship on their homepages. Luleå: Luleå University of technology. Doctoral thesis.

Martinsson, L. (2009). Entreprenöriellt lärande – utveckling och drivkrafter på två varianter av samhällsvetenskapsprogrammet. [Entrepreneurial learning – developing and driving forces on the two variants of the social sciences program]. Malmö Högskola Lärarutbildningen. Examensarbete.

Matlay, H. (2008). The impact of entrepreneurship education on entrepreneurial outcomes. Journal of Small Business and Enterprise Development, 15(2), 382-396.

Petersson, O., Hermansson, J., Micheletti, M., Teorell, J., & Westholm, A. (1998). Demokratirådets rapport 1998. Demokrati och medborgarskap. [The democracy councils report 1998. Democracy and citizenship]. Stockholm: SNS-Förlag.

Print, M. (2007). Citizenship education and youth participation in democracy. British Journal of Educational Studies, 55(3), 325-345.

Ross, A. (2010). Multiple identities and education for active citizenship. British Journal of Educational Studies, 55(3), 286-303.

Sandström, Kjellin, M., & Stier, J. (2008). Citizenship in the classroom: Transferring and transforming transcultural values. Intercultural Education, 19(1), 41-51.

Sarasvathy S., & Venkataraman, S. (2011). Entrepreneurship as method: Open questions for an entrepreneurial future. Entrepreneurship Theory and Practice. 113-135.

Seikkula-Leino, J. (2011). The implementation of entrepreneurship education through curriculum reform in Finnish comprehensive schools. Journal of Curriculum Studies, 43(1), 69-85.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. Academy of Management Review, 25(19), 217-226.

Sverige. Skolverket (2007). Kvalitet i fritidshem: allmänna råd och kommentarer. Stockholm: Skolverket. [Sweden, National Agency for Education. Quality in school: General advice and comments].

Sverige. Skolverket. (2011). Läroplan för grundskolan, förskoleklassen och fritidshemmet 2011. Stockholm: Skolverket. [Sweden, National Agency for Education. Curriculum for compulsory school, preschool and leisure-time centre, 2011].

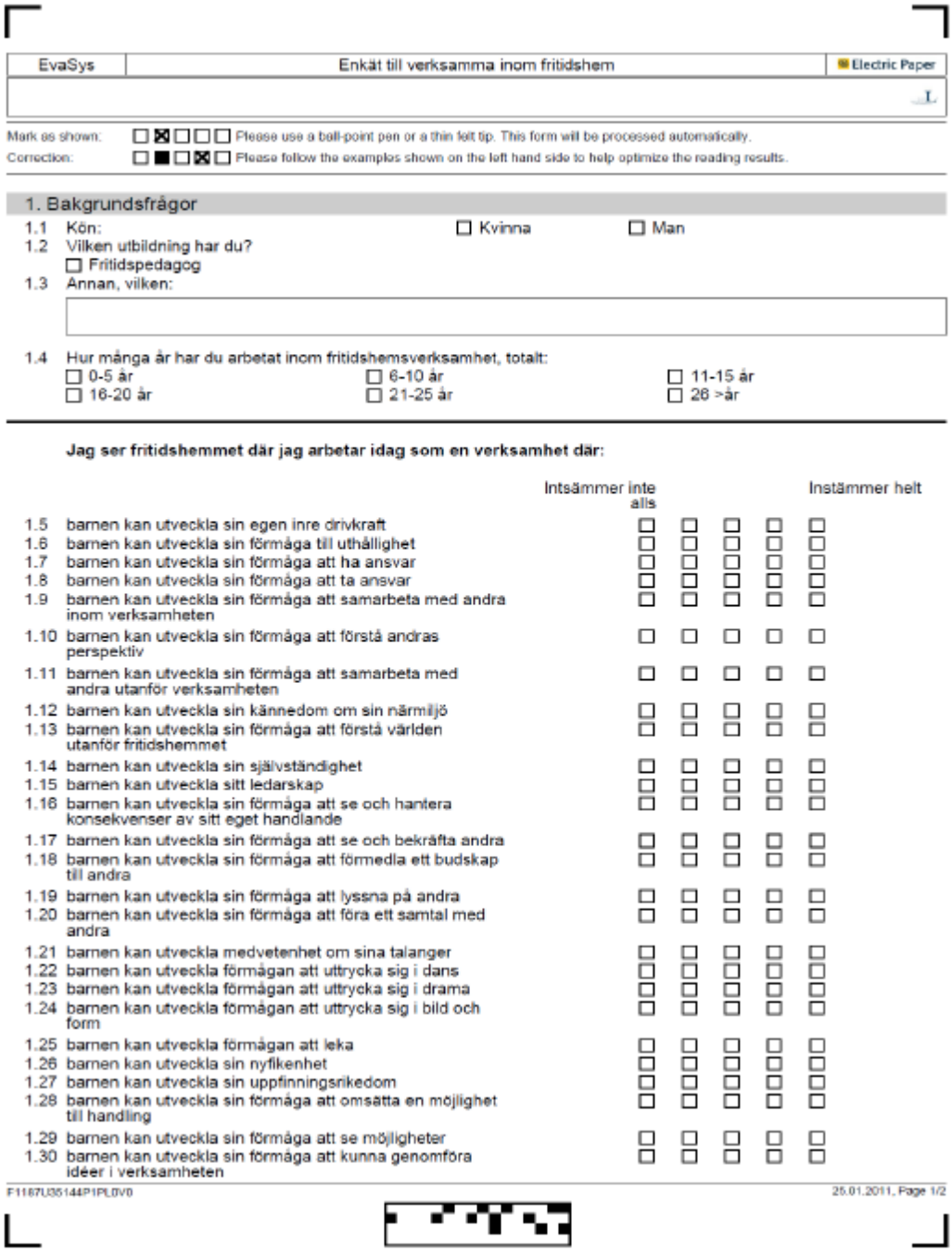
Sverige. (2010). Skollagen (2010:800); med lagen om införande av skollagen (2010:801). Stockholm: Norstedts juridik. [Education Act (2010:800)].

Sverige. Skolverket. (2010). Utveckling pågår: om kvalitetsarbete i fritidshem. Stockholm: Skolverket. [Sweden, National Agency for Education. Development is underway: the quality of work at the youth leisure centre].

Thompson, J. (1999). The world of the entrepreneur – A new perspective, Journal of Workplace Learning, 1(6), 209-224.

Appendix

Questionnaire



EvaSys | Enkät till verksamma inom fritidshem | Electric Paper

Mark as shown: ☐ ☒ ☐ ☐ ☐ Please use a ball-point pen or a thin felt tip. This form will be processed automatically.
Correction: ☐ ■ ☐ ☒ ☐ Please follow the examples shown on the left hand side to help optimize the reading results.

1. Bakgrundsfrågor

1.1 Kön: ☐ Kvinna ☐ Man
1.2 Vilken utbildning har du?
☐ Fritidspedagog
1.3 Annan, vilken:

1.4 Hur många år har du arbetat inom fritidshemsverksamhet, totalt:
☐ 0-5 år ☐ 6-10 år ☐ 11-15 år
☐ 16-20 år ☐ 21-25 år ☐ 26 >år

Jag ser fritidshemmet där jag arbetar idag som en verksamhet där:

		Intsämmer inte alls				Instämmer helt
1.5	barnen kan utveckla sin egen inre drivkraft	☐	☐	☐	☐	☐
1.6	barnen kan utveckla sin förmåga till uthållighet	☐	☐	☐	☐	☐
1.7	barnen kan utveckla sin förmåga att ha ansvar	☐	☐	☐	☐	☐
1.8	barnen kan utveckla sin förmåga att ta ansvar	☐	☐	☐	☐	☐
1.9	barnen kan utveckla sin förmåga att samarbeta med andra inom verksamheten	☐	☐	☐	☐	☐
1.10	barnen kan utveckla sin förmåga att förstå andras perspektiv	☐	☐	☐	☐	☐
1.11	barnen kan utveckla sin förmåga att samarbeta med andra utanför verksamheten	☐	☐	☐	☐	☐
1.12	barnen kan utveckla sin kännedom om sin närmiljö	☐	☐	☐	☐	☐
1.13	barnen kan utveckla sin förmåga att förstå världen utanför fritidshemmet	☐	☐	☐	☐	☐
1.14	barnen kan utveckla sin självständighet	☐	☐	☐	☐	☐
1.15	barnen kan utveckla sitt ledarskap	☐	☐	☐	☐	☐
1.16	barnen kan utveckla sin förmåga att se och hantera konsekvenser av sitt eget handlande	☐	☐	☐	☐	☐
1.17	barnen kan utveckla sin förmåga att se och bekräfta andra	☐	☐	☐	☐	☐
1.18	barnen kan utveckla sin förmåga att förmedla ett budskap till andra	☐	☐	☐	☐	☐
1.19	barnen kan utveckla sin förmåga att lyssna på andra	☐	☐	☐	☐	☐
1.20	barnen kan utveckla sin förmåga att föra ett samtal med andra	☐	☐	☐	☐	☐
1.21	barnen kan utveckla medvetenhet om sina talanger	☐	☐	☐	☐	☐
1.22	barnen kan utveckla förmågan att uttrycka sig i dans	☐	☐	☐	☐	☐
1.23	barnen kan utveckla förmågan att uttrycka sig i drama	☐	☐	☐	☐	☐
1.24	barnen kan utveckla förmågan att uttrycka sig i bild och form	☐	☐	☐	☐	☐
1.25	barnen kan utveckla förmågan att leka	☐	☐	☐	☐	☐
1.26	barnen kan utveckla sin nyfikenhet	☐	☐	☐	☐	☐
1.27	barnen kan utveckla sin uppfinningsrikedom	☐	☐	☐	☐	☐
1.28	barnen kan utveckla sin förmåga att omsätta en möjlighet till handling	☐	☐	☐	☐	☐
1.29	barnen kan utveckla sin förmåga att se möjligheter	☐	☐	☐	☐	☐
1.30	barnen kan utveckla sin förmåga att kunna genomföra idéer i verksamheten	☐	☐	☐	☐	☐

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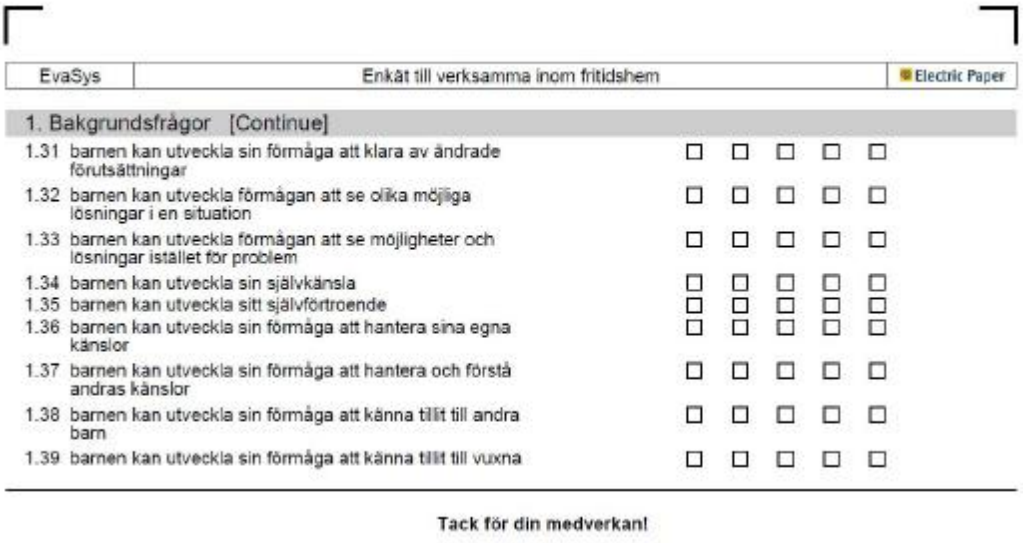


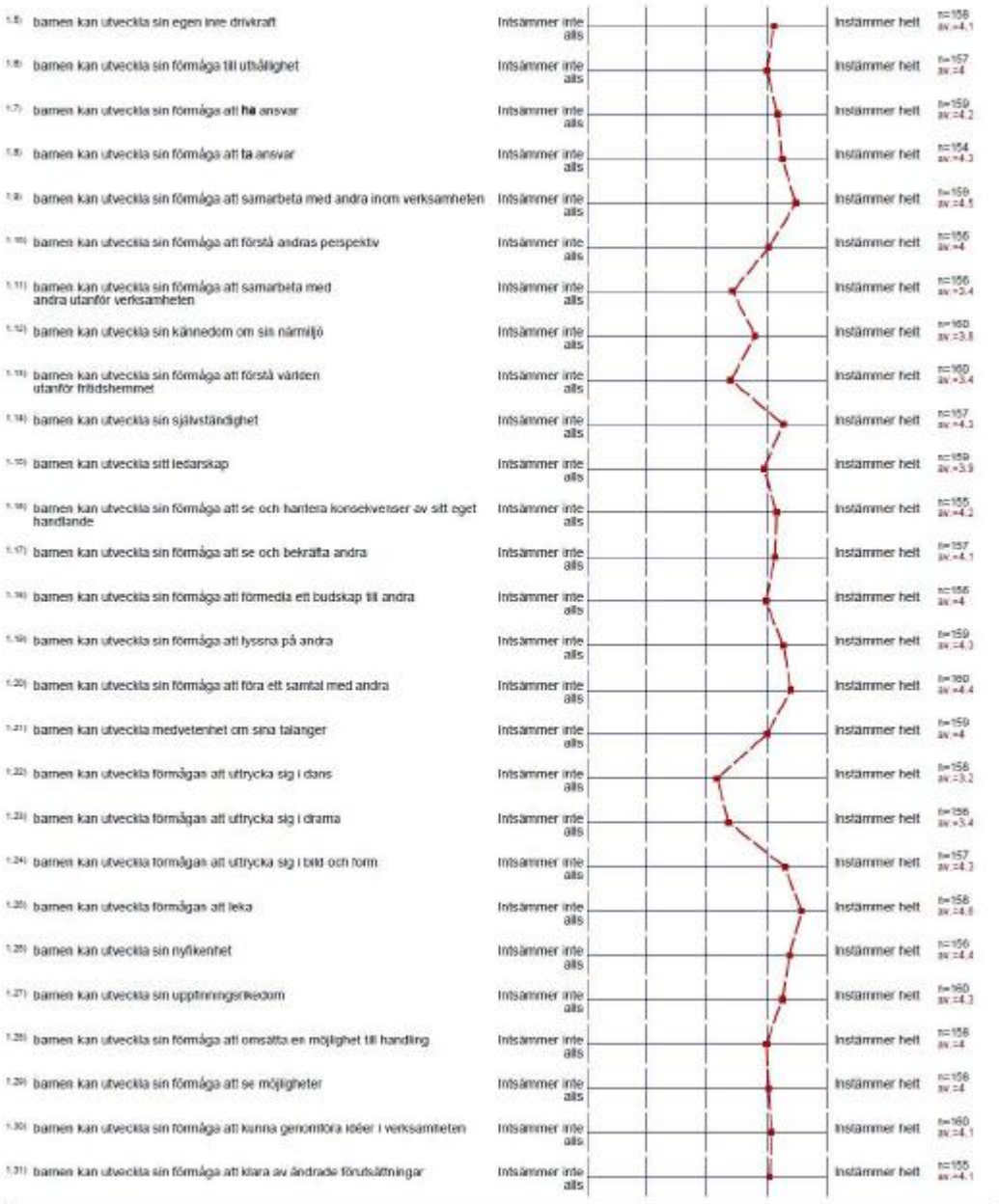
EvaSys	Enkät till verksamma inom fritidshem	Electric Paper

1. Bakgrundsfrågor [Continue]

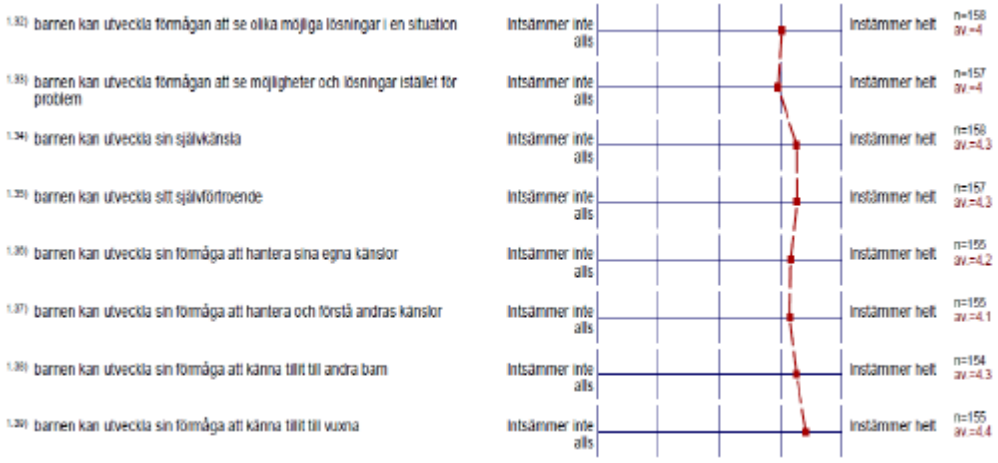
1.31	barnen kan utveckla sin förmåga att klara av ändrade förutsättningar	☐	☐	☐	☐	☐
1.32	barnen kan utveckla förmågan att se olika möjliga lösningar i en situation	☐	☐	☐	☐	☐
1.33	barnen kan utveckla förmågan att se möjligheter och lösningar istället för problem	☐	☐	☐	☐	☐
1.34	barnen kan utveckla sin självkänsla	☐	☐	☐	☐	☐
1.35	barnen kan utveckla sitt självförtroende	☐	☐	☐	☐	☐
1.36	barnen kan utveckla sin förmåga att hantera sina egna känslor	☐	☐	☐	☐	☐
1.37	barnen kan utveckla sin förmåga att hantera och förstå andras känslor	☐	☐	☐	☐	☐
1.38	barnen kan utveckla sin förmåga att känna tillit till andra barn	☐	☐	☐	☐	☐
1.39	barnen kan utveckla sin förmåga att känna tillit till vuxna	☐	☐	☐	☐	☐

Tack för din medverkan!

Profile of the results



Profile of the results, continued



EXAMINING THE RELATIONSHIPS BETWEEN SCHOOL PRINCIPALS' TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP STYLES AND TEACHERS' ORGANIZATIONAL COMMITMENT

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Abstract: The purpose of this study was to determine the relationships between school principals' transformational and transactional leadership styles and teachers' organizational commitment. A total of 237 primary school teachers employed in Ankara participated in the study. The "Multi-Factor Leadership Questionnaire" developed by Bass and Avolio (1995) and "Organizational Commitment Questionnaire" developed by Allen and Meyer (1990) were used to gather data. Results indicated that school principals were more likely to perform transformational leadership style than transactional leadership styles. Teachers' commitment scores were the highest in continuance commitment. There were significant relationships between transformational and transactional leadership styles of principals and organizational commitment of teachers. Results also showed that motivation by inspiration and individualized consideration predicted affective commitment significantly. While contingent reward dimension of leadership styles was the only significant predictor of teacher continuance commitment, management by exceptions (passive) and laissez-faire significantly predicted normative commitment.
Keywords: Transformational leadership, transactional leadership, organizational commitment, teacher, school principal

Introduction

The problems which people face in organizational environment might reduce the effectiveness and performance. One of these problems is stress in organizations (Norfolk, 1989). It is pointed out that stress stemming from job might cause some problems (Baltaş & Baltaş, 2000). The studies on organizational environment indicate that the reason for employees' job stress comes from the behaviors of organizational administrators (O'Driscoll & Beehr, 1994) and that administrators' behaviors are related to various variables (Cemaloğlu, 2007). In the studies which were carried out in educational organizations, significant relations were found between school principals' leadership behaviors and teachers' motivation level and morale (Kabadayı, 1982), motivation (Webb, 2007), job satisfaction (Bogler, 2001) and mobbing (Cemaloğlu, 2007).

One of the reasons that reduces organizational effectiveness and productivity is the low level of organizational commitment. Studies demonstrated that in the case of low level of organizational commitment, organizational trust decreases (Yılmaz, 2008). School principals' leadership behaviors are accepted to be one of the reasons for the problems that occur in the school and these problems prevent school from reaching its objectives (O'Driscoll & Beehr, 1994). Moreover, the relationships between leadership behaviors and organizational commitment are frequently studied and discussed in the study. Some researches indicate that there is a significant relationship between organizational commitment and leadership (Yavuz, 2008). Concordantly, it is assumed that examining the relationship between school principals' leadership styles and the level of teachers' organizational commitment is important for explaining the important problems at schools and finding solutions for them.

Transformational Leadership

Transformational leadership is defined as finding the current energy in followers by creating an active interaction environment in the organization and mobilizing this energy in the direction of organizational objectives. Primary objective of transformational leaders is to increase the perception of success in the organization and to motivate the organization's members (Bass, 2000). Transformational leaders motivate the followers to realize organizational objectives by gaining their confidence. Transformational leaders make the employees be disposed to deal with problems and difficulties they encounter and they provide autonomy for them to increase their performance and efficacy (Bass, Avolio, Jung, & Berson, 2003). Currie and Lockett (2007) state about the transformational leadership as a leadership style for meeting the needs of followers and a leadership that is sensitive to differences. Transformational leadership is analyzed in four different dimensions; namely, idealized influence (behavior or attributed), inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1985; Bass & Steidlmeier, 1999). *Idealized influence* means leader's determining institutions' vision and mission by incorporating the followers to the process (Karip, 1998). *Inspirational motivation* is creation of team spirit by the leader to reach organizational objectives and to increase the performance (Hall, Johnson, Wysocki, & Kepner, 2002). *Intellectual stimulation* is leader's supporting the followers for being creative and innovative (Bass, 2000). *Individualized consideration* is related to creation of a suitable and supportive environment in which individual differences and needs are considered (Bass, 1989), and the thoughts of the followers are valued (Tourish & Pinnington, 2002).

Transactional Leadership

Transactional leadership is related to motivating the employees and making them do the works with the help of external motivators such as organizational rewards (Bass, 2000). As Tengilimoğlu (2005) emphasizes that transactional leader generally works with a focus on continuing the works of the past and

transferring them to future. Nguni, Sleegers, and Denessen (2006) suggest that transactional leaders are not interested in people's personal development. They prefer a policy which is about preserving the current situation. Transactional leadership has four dimensions: Conditional reward, management by exceptions (active), management by exceptions (passive) and laissez-faire (Bass, 2000; Karip, 1998). *Contingent reward* means a process of mutual transaction in which leader is trying to motivate the followers by rewards and promises (Bass & Steidlmeier, 1999). *Management by exceptions (active)* is about leader's observing employees' performance and correcting their mistakes (Bass, 1985). *Management by exceptions (passive)* means leader's not intervening the organizational problems until they acquire a stricter situation and not acting before any kind of mistakes occurs (Karip, 1998). *Laissez-faire* is a leadership style in which the leader never intervenes the administrative processes and gives limitless freedom to the followers (Bass & Steidlmeier, 1999; Karip, 1998).

Organizational Commitment

Organizational commitment is a concept related to a lot of variables which affect the organizational behavior (Dee, Henkin, & Singleton, 2006). Organizational commitment is defined as a process in which employees internalize the values of the organization, keep on staying at the organization to get the results of their investments on the organization and they think that staying at the organization is a moral and ethical responsibility (Allen & Meyer, 1990). According to Park and Rainey (2007) organizational commitment means the bound between organization and the employee. Bogler and Somech (2004) note that the employees engaged in the organization want to have active roles in the organization. They want to have an impact on the programs, procedures or strategies of the organization. Organizational commitment has been examined in three dimensions: *Affective commitment* means employees' being identified with the organization they work for. *Continuance commitment* is related to employee's staying in the organization considering the price he/she will have to pay if he/she leaves the organization. *Normative commitment* is associated with the obligation that employees feel about staying in the organization (Allen & Meyer, 1990).

Method

Participants

A total of 237 randomly selected teachers employed in 18 primary schools in Ankara participated in this correlational study. 139 (59%) of the participants are female, 98 (41%) of them are male. 80 (34%) of them are of the ages between 21 and 30, 113 (48%) of them are of the ages between 31-40, and 44 (18%) of them are of the ages 41 or above. Besides this, 35 (15%) of the teachers who participated in the research are science and mathematics teachers, 50 (21%) of them are social sciences teachers, 13 of them (5%) are fine arts teachers, 35 (15%) of them are preschool teachers, and 104 (44%) of them are classroom teachers.

Instruments

Multi Factor Leadership Questionnaire-Evaluation Form (5x short). This form was developed by Bass and Avolio (1995) and translated into Turkish by Cemaloğlu (2007) to examine school principals' leadership styles. There are 20 items related to transformational leadership, idealized influence (behavior) (4 items), idealized influence (attributed) (4 items), motivation by inspiration (4 items), intellectual stimulation (4 items), individualized consideration (4 items). There are 16 items in transactional leadership, conditional reward (4 items), management by exceptions (active) (4 items), management by exceptions (passive) (4 items) and Laissez-faire (4 items). Likert scale of 5 items was used in the evaluation of the items. In the reliability study which was carried out by Cemaloğlu, Cronbach's Alpha consistency coefficient was found to be 95. In this study, reliability coefficient for transformational leadership is .89, while it is .60 for transactional leadership.

Organizational Commitment Questionnaire. To measure the level of organizational commitment Organizational Commitment Questionnaire (OCQ) which was developed by Meyer and Allen (1990) was used in this study. This questionnaire includes three subscales: Affective commitment, continuance commitment, and normative commitment. Although the questionnaire has gone through reliability and validity tests many times the reliability and validity of the questionnaire were tested again in this research. As a result of the analysis three factors were found in organizational commitment questionnaire. Total variance explained by three factors is approximately 57%. The first factor constitutes 29.385%, second factor constitutes 19.052%, third factor constitutes 8.450% of the total variance. Total item correlation is between .41 and .86. Total reliability coefficient of the questionnaire was found as .74. Internal consistency coefficients of continuance, affective, and normative commitments were .88, .72, and .63, respectively.

Data Analysis

Data was collected through survey method. Data was recorded on SPSS 15 program. Descriptive statistics methods were used for evaluating teachers' leadership styles. Pearson correlation coefficients were calculated to find out the relationships among variables for all the teachers who participated in the study. Standard multiple regression analysis was used to predict the dependent variables (components of teacher organizational commitment) by the independent variables (dimensions of school principals leadership styles).

Results

First of all, teachers' perceptions about school principals' leadership styles and teachers' organizational commitment were analyzed and then the relationships between leadership styles and teachers' organizational commitment levels were analyzed.

Table 1 Teachers' Perceptions about School Principals' Leadership Styles and Their Organizational Commitment Levels (n = 237)

Variables	$\overline{X}$	S
Leadership Styles		
Idealized Influence (Behavior) (IIB)	2.96	1.00
Idealized Influence (Attributed) (IIA)	2.51	.81
Motivation by Inspiration (MI)	2.81	.72
Intellectual Stimulation (IS)	2.53	.76
Individualized Consideration (IC)	2.50	.76
Conditional Reward (CR)	2.74	.72
Management by Exceptions (Active) (MEA)	2.24	.70
Management by Exceptions (Passive) (MEP)	1.61	.80
Laissez-Faire (LF)	1.40	.91
Organizational Commitment		
Affective Commitment (AC)	2.77	.86
Continuance Commitment (CC)	3.72	.85
Normative Commitment (NC)	3.32	.90

As can be seen from Table 1, school principals mostly use the idealized influence (behavior) ($\overline{X}$ = 2.96). Generally, it is seen that school principals prefer transformational leadership style to transactional leadership style. In other words, principals are trying to motivate teachers by persuasion and they prefer being active by effecting the employees. When the standard deviation values are analyzed, it is clear that the most heterogenic distribution is in idealized influence dimension (behavior) (S = 1.00), and the most homogenous distribution is in management by exceptions (active) dimension (S = .70). When teachers' organizational commitment levels are analyzed, affective commitment is the commitment dimension that has the least value ($\overline{X}$ = 2.77) and continuance commitment is the commitment dimension which has the most value ($\overline{X}$ = 3.72). In other words, teachers base their commitment for the organization they work on the economic interest mostly. On the other hand, the low level of affective commitment of teachers might mean that teachers cannot be identified with the school and they cannot devote themselves to their schools

properly. Also, standard deviation values for commitment subscales seem to be similar; affective commitment (S = .86), continuance commitment (S = .85) and normative commitment (S = .90)

Table 2 The Relationship between School Principals' Leadership Styles and Organizational Commitment Levels

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. IIB	-	.53**	.58**	.53**	.53**	.57**	.30**	-.25**	-.31**	-.10	.40**	.07
2. IIA		-	.72**	.78**	.78**	.77**	.33**	-.23**	-.42**	-.21**	.52**	.23**
3. MI			-	.75**	.65**	.66**	.33**	-.23**	-.43**	-.28**	.44**	.12
4. IS				-	.76**	.76**	.34**	-.24**	-.47**	-.24**	.53**	.23**
5. IC					-	.72**	.40**	-.29**	-.41**	-.11	.50**	.27**
6. CR						-	.40**	-.27**	-.49**	-.25**	.58**	.19**
7. MEA							-	.09	-.05	-.04	.24**	.19**
8. MEP								-	.64**	.14*	-.26**	-.10
9. LF									-	.24**	-.35**	-.03
10. AC										-	-.23**	.27**
11. CC											-	.32**
12. NC												-

** $p < .01$; * $p < .05$

As can be seen from Table 2, affective commitment was negatively correlated with idealized influence (attributed) (r = -.21, p < .01), motivation by inspiration (r = -.28, p < .01), intellectual stimulation (r = -.24, p < .01), conditional reward (r = -.25, p < .01), however, it was positively and significantly associated with management by exceptions (passive) (r = .14, p < .05) and laissez-faire (r = .24, p < .01). Teachers' continuance commitment was positively and significantly related to idealized influence (behavior) (r = .40, p < .01), idealized influence (attributed) (r = .52, p < .01), motivation by inspiration (r = .44, p < .01), intellectual stimulation (r = .53, p < .01), individualized consideration (r = .50, p < .01), contingent reward (r = .58, p < .01), management by exceptions (active) (r = .24, p < .01), however, it was negatively and significantly related to management by exceptions (passive) (r = -.26, p < .01) and laissez-faire (r = -.35, p < .01). Normative commitment dimension was positively and significantly correlated with idealized influence (attributed) (r = .23, p < .01), intellectual stimulation (r = .23, p < .01), individualized consideration (r = .27, p < .01), contingent reward (r = .19, p < .01), and management by exceptions (active) (r = .19, p < .01).

Table 3 Results of Regression Analyses for the Components of Teacher Commitment

Variables	Affective[a]			Continuance[b]			Normative[c]		
	β	t	p	β	t	p	β	t	p
(Constant)		9.82	.00		7.13	.00		6.94	.00
IIB	.11	1.38	.17	.06	.86	.39	-.12	-1.50	.14
IIA	-.05	-.38	.71	.09	.87	.39	.18	.96	.34
MI	-.26	-2.55	.01	-.03	-.38	.70	-.15	-1.48	.14
IS	-.08	-.63	.53	.13	1.27	.20	.18	1.48	.14
IC	.21	2.50	.01	.05	.51	.61	.18	1.64	.10
CR	.11	-1.67	.09	.33	3.34	.00	.01	.05	.96
MEA	.02	.31	.76	.02	.27	.79	.12	1.71	.09
MEP	.04	.46	.65	-.09	-1.32	.19	-.18	-2.18	.03
LF	.11	1.20	.23	-.01	-.10	.92	.20	2.21	.03

[a] $R = .37$, $R^2 = .14$; $F = 4.02$, $p < .05$.
[b] $R = .61$, $R^2 = .37$; $F = 14.78$, $p < .05$.
[c] $R = .36$, $R^2 = .13$; $F = 3.71$, $p < .05$.

Table 3 shows the results of standard multiple regressions for variables predicting the affective, continuance, and normative components of teacher organizational commitment. A multiple *R* of .37 explained 14% of the variance in affective commitment scores. Inspirational motivation ($\beta = -.26$, $p < .05$) and individualized consideration ($\beta = .21$, $p < .05$) predicted affective commitment significantly. However, idealized influence (behavior) ($\beta = .11$, $p > .05$), idealized influence (attributed) ($\beta = -.05$, $p > .05$), intellectual stimulation ($\beta = -.08$, $p > .05$), contingent reward ($\beta = .11$, $p > .05$), management by exceptions (active) ($\beta = .02$, $p > .05$), management by exceptions (passive) ($\beta = .04$, $p > .05$) and laissez-faire ($\beta = .11$, $p > .05$) were not significant in predicting affective commitment. For continuance commitment, 37% of the variance was explained by the dimensions of leadership styles. Only the contingent reward dimension of leadership styles was the significant predictor of teacher continuance commitment ($\beta = .33$, $p < .05$) while the other eight leadership styles' dimensions were statistically insignificant. For the normative commitment factor, regression analysis produced a multiple *R* of .36, which explained 13 % of the variance. Management by exceptions (passive) ($\beta = -.18$, $p < .05$) and laissez-faire ($\beta = .20$, $p < .05$) significantly predicted teacher normative commitment. Idealized influence (behavior), idealized influence (attributed), inspirational motivation, intellectual stimulation, individualized consideration, contingent reward and management by exceptions (active) were not significant predictors of the normative commitment.

Discussion and Conclusion

In this study, teachers' perceptions about their own organizational commitment levels and about school principals' leadership styles are analyzed. In addition, relationships between school principals' transformational and transactional leadership styles and teachers' organizational commitment levels became the subject of the research. This study using leadership styles as the predictors of organizational commitment has supported the argument that school principals' leadership styles is a meaningful construct for understanding and explaining teacher organizational commitment in Turkish primary schools. It was put forward that school principals prefer transformational leadership style to transactional leadership style and that teachers' continuance commitment levels are higher than affective and normative commitment. This may suggest that teachers give more importance to economic earnings than personal satisfaction. In other aspect, a quite number of studies reveal the fact that teaching is a very stressful and tiring job (Austin, Shah, & Muncer, 2005; Capel, 1991; Dick & Wagner, 2001; Tsiakkiros & Pashiardis, 2006) and also teachers are easily criticized by the community (Hoy, Tarter, & Kottkamp, 1991). This may result in low affective and normative commitment for teachers.

In this study, significant relationships between school principals' leadership styles and teachers' organizational commitment levels were found. School principals' showing the behaviors of idealized influence (behavior), idealized influence (attributed), motivation by inspiration, intellectual stimulation, individualized consideration, conditional reward and management by exceptions (active) are negatively related to teachers' affective commitment. In contrast, teachers' affective commitment is positively correlated with principals' using management by exceptions (passive) and laissez-faire leadership styles. Management by exceptions (passive) and laissez-faire are such kind of leadership styles in which principals do not intervene with the job teachers are doing and give them a limitless freedom in the organization. This may mean that teachers' affective commitment may be related more to the feeling of freedom and autonomy. In other words, teachers affectively committed to their schools possibly do not need motivation or direction of the leader. This finding is consistent with the expression of Tarter, Hoy, and Kottkamp (1990) that school principal is the leading factor to teacher commitment. In contrast to the findings about affective commitment, teachers' continuance and normative commitment are negatively related to management by exceptions (passive) and laissez-faire leadership styles. It may be referred from this finding that active, motivating, intellectual, and mutual behaviors of school principals are important in teachers' continuance and normative commitment. Tsui and Cheng (1999) state that principals' being supportive and open to teachers are important for teachers' commitment to their schools. This is clearly consistent with the findings of the study. Furthermore, Allen and Mayer (1990) assert that continuance and normative commitment stem from an obligation for staying in the organization. This obligation may come

from economic or social causes. Considering this, the fact that continuance and normative commitment are negatively associated with management by exceptions (passive) and laissez-faire is understandable.

Result also mirrored that different leadership styles were significantly related to different components of teacher commitment. Inspirational motivation and individualized consideration were predicting affective commitment. The fact that teachers' affective commitment was predicted by inspirational motivation and individualized consideration might mean that teachers want their principals to be interested in their individual beliefs, norms, and needs. Affective commitment may be linked to the feeling of closeness to school members and giving others' well-being (O'Reilly & Chatman, 1986). Therefore, principals who motivate teachers and pay attention to their voices may help teachers experience deeper affective contact with school. This finding is in line with the ideas of Tarter *et al*. (1990) that school principal is likely to create climate of commitment. Contingent reward was predicting continuance commitment and management by exceptions (passive), and laissez-faire were predicting normative commitment. The fact that contingent reward predicted continuance commitment is understandable in that teachers may work more efficiently if their efforts are appreciated by school principals. In other aspect, school principals probably use rewards to make school's educational setting more effectively.

The purpose of this study was to examine the relationships between school principals' transformational and transactional leadership styles and organizational commitment of teachers. Only the perceptions of teachers on their commitment and schools' leadership styles were examined. Therefore, future studies may have a tendency to examine the commitment of principals to the school. Other research methods such as interview or document analysis are possible to be used to gather data. Further research also can be done to determine the factors that affect teachers' or principals' commitment. Principals' role for developing commitment of school members and creating a more healthy school setting might be analyzed.

References

Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization, *Journal of Occupational Psychology, 63,* 1-18.

Austin, V., Shah, S., & Muncer, S. (2005). Teacher stress and coping strategies used to reduce stress. *Occupational Therapy International, 12*(2), 63-80.

Baltaş, A. ve Baltaş, Z. (2000). *Stres ve başaçıkma yolları [Stress and ways to cope with]* (Twentieth edition). İstanbul: Remzi.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free.

Bass, B. M. (2000). The future of leadership in learning organizations. *Journal of Leadership & Organizational Studies, 7*(3), 18-40.

Bass, B. M., & Avolio, B. J. (1995). *The multifactor leadership questionnaire form 5x*. Palo Alto, CA: Mind Garden.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology, 88*(2), 207-218.

Bass, B. M., & Steidlmeier, P. (1999). Ethics, character, and authentic transformational leadership behavior. *Leadership Quarterly, 10*, 181-217.

Bogler, R. (2001). The influence of leadership style on teacher job satisfaction. *Educational Administration Quarterly, 37*(5), 662-683.

Bogler, R., & Somech, A. (2004). Influence of teacher empowerment on teachers' organizational commitment, professional commitment and organizational citizenship behavior in schools. *Teaching and Teacher Education, 20*, 277-289.

Boylu, Y., Pelit, E., & Güçer, E. (2007). Research on the academicians' organizational commitment levels. *Finance Politics & Economical Interpretations, 44*, 55-74.

Capel, S. A. (1991). A longitudinal study of burnout in teachers. *British Journal of Educational Psychology, 61*, 36-45.

Cemaloğlu, N. (2007). The relationship between school principals' leadership styles and mobbing. *Hacettepe University Journal of Education, 33*, 77-87.

Currie, G., & Lockett, A. (2007). A critique of transformational leadership: Moral, professional and contingent dimensions of leadership within public services organizations. *Human Relations, 60*(2), 341-370.

Dee, J. R., Henkin, A. B., & Singleton, C. A. (2006). Organizational commitment of teachers in urban schools: Examining the effects of team structures. *Urban Education, 41*(6), 603-627.

Dick, R. V., & Wagner, U. (2001). Stress and strain in teaching: A structural equation approach. *British Journal of Educational Psychology, 71*, 243-259.

Hall, J., Johnson, S., Wysocki, A., & Kepner, K. (2002). Transformational leadership: The transformation of managers and associates [Online], Retrieved on 6 April 2008 at URL: http://edis.ifas.ufl.edu/ pdffiles/HR/ HR02000. pdf.

Hoy, W. K., Tarter, C. J., & Kottkamp, R. B. (1991). Open schools/healthy schools: Measuring organizational climate (1st ed.). Newbury Park: Sage.

Kabadayı, R. (1982). *School principals' leadership behaviors and teachers' motivation* (Unpublished doctoral dissertation). Hacettepe University, Ankara.

Karip, E. (1998). Transformational leadership. *Educational Administration in Theory and Practice, 4*(16), 443-465.

Nguni, S., Sleegers, P., & Denessen, E. (2006). Transformational and transactional leadership effects on teachers' job satisfaction, organizational commitment, and organizational citizenship behavior in primary schools: The Tanzanian case. *School Effectiveness and School Improvement. 17*(2), 145-177.

Norfolk, D. (1989). *Stress in business life* (Translator: L. Serdaroğlu). İstanbul: Form.

O'Driscoll M. P., & Beehr, T. A. (1994). Supervisor behaviors, role stressors and uncertainty as predictors of personal outcomes for subordinate. *Journal of Organizational Behavior, 15*, 141-155.

O'Reilly, C. A., & Chatman, J. (1986). Organizational commitment and psychological attachment: The effects of compliance, identification, and internalization on prosocial behavior. *Journal of Applied Psychology, 71*(3), 492-499.

Park, S. M., & Rainey, H. G. (2007). Antecedents, mediators and consequences of affective, normative, and continuance commitment empirical tests of commitment effects in federal agencies. *Review of Public Personnel Administration, 27*(3), 197-226.

Tarter, C. J., Hoy, W. K., & Kottkamp, R. B. (1990). School health and organizational commitment. *Journal of Research and Development in Education, 23*(4), 236-242.

Tengilimoğlu, D. (2005). A field study for detecting the leadership behavior features in public and private sector organizations. *Electronic Social Sciences Journal*, *4*, 1-16.

Tourish, T., & Pinnington, A. (2002). Transformational leadership, corporate cultism and the spirituality paradigm: An unholy trinity in the workplace? *Human Relations, 55*(2), 147-172.

Tsiakkiros, A., & Pashiardis, P. (2006). Occupational stress among Cyprus headteachers: Sources and coping strategies. *Staff Issues and Professional Development, 34*(2), 100-114.

Tsui, K. T., & Cheng, Y. C. (1999). School organizational health and teacher commitment: A contingency study with multi-level analysis. *Educational Research and Evaluation, 5*, 249-268.

Yavuz, E. (2008). *Analysis of transformational and transactional leadership behaviors on organizational commitment* (Unpublished doctoral dissertation). Gazi University, Ankara.

Yılmaz, K. (2008). The relationship between organizational trust and organizational commitment in Turkish primary schools. *Journal of Applied Sciences*, *8*(12), 2293-2299.

Webb, S. R. (2007). *The relationship between elementary school principals' leadership approaches and teacher motivation and job satisfaction in Alabama's Black Belt Region* (Unpublished doctoral dissertation). Retrieved from ProQuest Dissertations and Thesis database. (UMI: 3292149).

TOJNED

THE MATHEMATICS EDUCATION FOR THE ENGINEERING STUDENTS OF 21ST CENTURY

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Abstract: Engineering is one of the most important professions for the mathematics discipline. New developments in engineering have stimulated new areas of mathematical research. Control theory, signal processing and coding theory are all examples for this. When taking into account the close relationship between engineering and mathematics, we can easily say that mathematics have a vital role in the engineering education. In the last twenty years, both new demands of the engineering profession and inadequate mathematics ability of the engineering students have led in a big change in the scope of the mathematics education. The recent developments in technology and computers have caused variation in teaching mathematics of engineering students and have brought with them the use of modern techniques and methods. This research aims to shed some light on how the mathematics education, which is an important part of the engineering education for the 21st century engineers, must be, by investigating the curriculum, teaching and measurement–assessment methods.

Introduction

The ever more rapid pace of technological development has created a situation in which many engineers will require frequent updating in areas of their specialization. This may involve the mastery of new techniques and understanding of new theoretical concepts. A fluency with mathematics is an essential weapon in modern graduate engineer's armoury (Mustoe& Lowson, 2002, p.3).

In the last twenty years, both new demands of the engineering profession and inadequate mathematics ability of the engineering students have led in a big change in the scope of the mathematics education. . The recent developments in technology and computers have caused variation in teaching mathematics of engineering students and have brought with them the use of modern techniques and methods.

Insufficient skills in basic mathematics cause problems for those majoring in engineering at university level. A big portion of students seems to be able to find correct solution to test and exam questions using familiar steps and procedures. Yet they lack deep conceptual understanding of the underlying theorems and sometimes have misconceptions (Norbert & Klymchuk, 2002). The one of the most important skills required of engineering students are problem solving and creative thinking, but they have some difficulties in these issues (Adams at al, 2007). In addition, the student profile has been changed and the number of international students has been increased. Almost all branches of engineering profession, in parallel with changes in technology, new demands arise.

Developments in educational technology, engineering profession's profile and the expected new demands on students' math capabilities and profile differences have effected mathematics education of engineering students.

In this study, changes in mathematics education for engineers are discussed in terms of curriculum, teaching and assessment methods.

Method

Survey method was used at this research of which aim is to discuss the changes that is happening in the mathematics teaching for 21th century engineers. Survey method is a research approach to describe a past or present situation in the way as it is.

Findings

1. Curriculum

The importance of a serious mathematics education for engineering was highlighted in many studies. While there is no consensus on the amount and content of the mathematics for different engineering disciplines, there is a consensus on the need for a basic mathematics in all of them (Broadbridge& Hendersen, 2008). The most effective subjects for engineering mathematics must be a part of an engineering program which must give the chance to see the main developments in the concepts and understanding for related subjects. The way mathematics is included in different engineering educational institutions curricula varies, but there are some basic requirements to be fulfilled (Mustoe& Lowson, 2002, p.2).

Mathematics Working Group of The European Society for Engineering Education (SEFİ) conducted an extensive study on the content of engineering mathematics at 2002. At that study a core program was developed which has four levels. These levels represent an attempt to reflect the hierarchical structure of mathematics and the way in which mathematics can be linked to real applications of ever-greater sophistication as the student progress through the engineering degree program (Mustoe& Lowson, 2002, p.8). The diagram of the core program is shown in Figure 1.

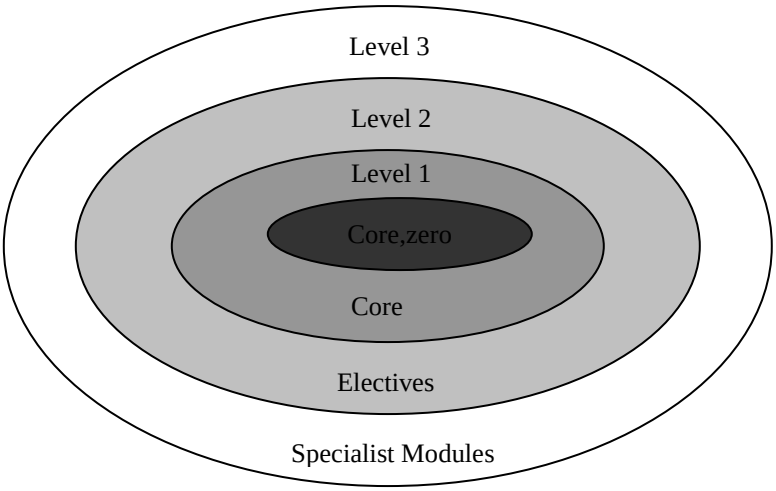

Figure 1. The schematic diagram of the proposed structure

Within the three main levels the material has been arranged under five sub-headings: Analysis and calculus, discrete mathematics, geometry, linear algebra, statistics and probability.

The core zero consists of the material that the freshman should study before entry to an undergraduate engineering degree program. The core zero contains material which together forms a solid platform on which build a study of engineering mathematics at university. The material in Core Zero has been grouped into five areas: Algebra, Analysis & Calculus, Discrete Mathematics, Geometry & Trigonometry, and Statistics & Probability (Mustoe& Lowson, 2002, p.11).

The material at core level 1 builds on core zero and is regarded as basic to all engineering disciplines in that it provides the fundamental understanding of many mathematical principles. The material in core level 1 can be used by engineers in understanding and the development of theory and in the sensible selection of tools for analysis of engineering problems. This material will be taught in the early stages of a university programme (Mustoe& Lowson, 2002, p.21).

The material at level 2 builds on core level 1. The material is advanced enough for simple real engineering problems to be addressed. Different disciplines will select different topics from the material of level 2 (p.32).

Level 3 is the one at which the mathematical techniques covered should be applied to a range of problems encountered in industry by practicing engineers. These advanced methods build on the foundations laid by levels 1 and 2 of the curriculum. It is quite possible that much of this material will be taught not within the context of dedicated mathematical units but as part of units on the engineering topics to which they directly apply (p.45).

2. The Methods of Teaching and Assessment

Lopez (2007) found a large body of research highlighting the need for educators of engineers to adapt to changing nature of both the engineering profession and the student population in the 21st Century. A more diversified student population requires a more comprehensive learning support system. Therefore, there is much debate as to how these changes should be addressed (Broadbridge& Hendersen, 2008, p.10).

Some problems which engineering institutions faced are listed below:

- a decline in the mathematical ability of entering engineering students,
- the lowering of entry standards and increased number of international students (it has also led to the increased diversity of students' mathematical backgrounds),
- the reduction of mathematical content and course hours,
- to cater mathematical needs for all engineering disciplines in one subject and the difficulty of reaching a shared understanding between the mathematics and engineering departments about what is to be included in the curriculum,
- the difficulty of teaching large classes with inadequate facilities,
- the lack of mathematics staff.

To resolve these problems, institutions and educationalists have begun to use new methods. Some examples of these are problem/project based learning, support programs for the students, online support, visual sources, mathematical software programs, online instructional materials, computer-aided assessment, flexible, formative and summative assessment (Broadbridge& Henderson, 2008).

To overcome the difficulties faced by the students in mathematics lessons, many engineering institutions have offered academic support services. The Mathematics Support Centers (MathCentre) of many universities in England give online courses, lecture notes, tests, videos for mathematics teaching at their web site for free (e.g. University of Loughbough, Coventry and Leeds). Loughbough, Manchester, Reading, Hull and Sunderland University have made the HELM project (Helping Engineers Learn Mathematics) between 2002–2005 years to enhance the mathematical education of engineering undergraduates by provision of range of flexible learning and teaching resources (Green at al, 2003).

Engineering students can also use the mathematics laboratories of some of the universities in the United States. (Deaware, MIT). Examples can also be given from Australia such as Adelaide University Maths Drop –In Centre, Queensland Technology University Math Access Centre etc.

From a survey of recent (from1995 up to the present time) literature in mathematics education for engineering students, following are notable means for teaching and learning to adapt to 21st century needs and conditions:

- use advanced computer based methods- web based interactive, software applications, or both,
- address student variability,
- take a multidisciplinary approach,
- use a Problem Based Learning strategy (Lopez, 2007, p.6)

Active learning means learning by doing. Active learning broadly encompasses all learning driven by the learner. The students' success will become higher when he or she participates to his learning process more (Nirmalakhandan at al., 2007, Lopez, 2007). Problem based learning and computer based learning is also classified as active learning.

With the rapid progress of computer technology in last couple of decades, software applications and the web have become important elements of the engineering mathematics education. The widely used software programs are Matlab, Excel, Minitab, Mathematica, Mapple, Mathcad (Broadbridge& Hendersen, 2008).

Cooperative learning in engineering mathematics education is one of the methods used and promotes the high success (Johnson at al, 2000). Variations and combinations of some learning methods such as project-based learning, the integrated approach, the four-leaf clover model are also used (Lopez, 2007).

Naturally, the changes of teaching and learning methods have affected assessment methods.

Additional assessment methods include a combination of some of these assessment methods; class tests, group projects, individual projects, written assessment and computer-aided assessment.

Continuous assessment gives to the educators a chance to have continuous information about the needs of the students and the class as a whole. With flexible assessment method student chooses his own evaluation method. This forces the student to have the control of his own learning and choosing the best method to show his success as much as possible (Wood&Smith, 1999).

As an example, mathematics courses content, teaching and assessment methods in the Mechanical Engineering Departments of Loughbough University are given below (Broadbridge&Henderson, 2008,p.58):

Table 1: Mechanical Engineering Program

Module	Credit	Pre req
Mathematics for Mechanical Engineering (MAA 310)	20	None
Mathematics for Mechanical Engineering (MAB 110)	10	MAA310

MAA 310: Mathematics for Mechanical Engineering

Content: Algebra of complex numbers, vectors and matrices. Solution of system of linear equations, determinants, matrices and Gauss elimination. Iterative solution of nonlinear equations (Newton Raphson). Elementary functions including hyperbolic functions. Ordinary and partial differential equation: techniques and applications including stationary values and errors. Integration: analytical techniques and Simpson's rule, applications (area, mean value, RMS, volumes of revolution). Ordinary differential equations: first order separable and linear equations, second order linear equations with constant coefficients, applications. Laplace transforms: application to solving ordinary differential equations. Sequences and series: infinite series, convergence, Binomial, Maclaurin and Taylor series.

Method of Teaching and Learning: Total student effort for the module: 200 hours on average.

Teaching & Learning: A combination of 48 one-hour lectures and 26 one-hour tutorials* with the remaining time for private study, working on problem sheets and revision for exam.

*Tutorials are where no new material is covered. Either students work through problems and get help from the staff on hand or else the lecturer goes through worked examples.

Assessment: Coursework: Eight computer-based or in class tests (8x5%= 40%). Summative Examination (60%) (3 hours).

MAB 110: Mathematics for Mechanical Engineering

Content: Elementary probability and statistics. Matrix eigenvalue problems, with application to solutions of Ordinary Differential Equations, for example vibrating systems. Optimisation of functions of several variables, with and without constraints. Fourier series and partial differential equations.

Method of Teaching and Learning: Total students effort for the module: 100 hours on average. A combination of 24 one-hour lectures and 12 one-hour tutorials with the remaining time for private study, working on coursework assignments and problem sheets and revision for exam.

Assessment: Coursework - 2 equal computer based tests (20%). Formal Examination (80%) (2 hours).

Conclusion

Engineering education is an important part of higher education. Mathematics teaching has a crucial role in engineering education. The recent developments in technology and computers have caused variation in teaching mathematics of engineering students and have brought with them the use of modern techniques and methods. Computer and internet can not be ignored in engineering education.

This research aims to shed some light on how the mathematics education, which is an important part of the engineering education for the 21st century engineers, must be, by investigating the curriculum, teaching and assessment methods.

References

Adams, P. A., Kaczmarczyk, S., Picton, P. & Demian, P (2007). Improving Problem Solving and Encouraging Creativity in Engineering Undergraduates. *International Conference on Engineering Education, Portugal*.

Broadbridge, P. & Henderson, S. (2008). Mathematics education for 21st century engineering students. Final Report. *Australian Mathematical Sciences Institute*. Available: http://www.amsi.org.au/.

Green, D., Harrison, M. & Ward, J. (2003). .Mathematics for engineers - the helm Project. *Conference on Strategies for Student Achievement in Engineering. UK.* Available: http://www.hull.ac.uk/engprogress/prog3papers/progress3_HELM_final.pdf

Gruenwald, N. & Klymchuk, S. (2002). Using Counter Examples To Enhance Students' Conceptual Understanding Engineering Undergraduate Mathematics: A Paralel Study. *Proceedings of the Second International Conference on the Teaching of Mathematics at the Undergraduate Level – ICTM-2. Crete, Greece. Wiley, ISBN: 0-471-46322-9.*

Henderson, S. & Broadbridge, P. (2009). Engineering Mathematics Education in Australia. *MSOR Connections 9(1): 12 – 17.*

Johnson, D. W., Johnson, R. T. & Stanne, M. B. (2000). Cooperative Learning Methods: A Meta Analysis. Available: http://www.tablelearning.com/uploads/File/EXHİBİT-B.pdf.

Lopez, A. (2007). Mathematics Education for 21st Century Engineering Students: Literature Review. *Australian Mathematical Sciences Institute*. Available: http://www.amsi.org.au/carrick.php.

Mustoe, L. & Lowson, D (Editors) (2002). Mathematics for the European Engineer A Curriculum for the Twenty –First Century. *SEFI Mathematics Working Group. SEFI HQ, Brussells, Belgium, ISBN 2-87352-045-0.*

Nirmalakhandan, N., Ricketts, C., McShannon, J. & Baret, S. (2007). Teaching Tools to Promote Active Learning: Case Study. *Journal of Professional Issues in Engineering Education and Practice, Vol. 133, pp. 31-37*. Available: www.spacegrant.nmsu.edu/NMSU/fac_deu/article2.pdf.

Wood, L. N. & Smith, G. H. (1999). Flexible Assessment. Proceeding of Delta 1999 The Challenge of Diversity- *A Symposium on Undergraduate Mathematics. Queensland*. Available: http://www.sci.usq.au/staff/spunde/delta99/Papers/wood_2.pdf.

TOJNED

VISUAL LITERACY SCALE: THE STUDY OF VALIDITY AND RELIABILITY

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Abstract: Visual materials like pictures, graphics, and videos that are encountered frequently in the printed and visual areas such as television, web sites, newspapers, journals, and books; as well as in daily life like highways, air ways, cars, and schools are nowadays inseparable parts of daily life. With the development of new technologies and communication methods, these visuals are aimed to be utilized more efficiently. Visuality, which plays an efficient role in the communication, is especially important for individuals, and especially for students, to remember what they have read.

The aim of the present study was to develop a reliable and valid instrument for assessing students' qualifications in visual literacy. The sample of the study consisted of 506 students (307 females/ 199 males) from Sakarya University, Faculty of Education. Ages of the participants ranged between 17 and 30, with a mean of 19.7 (SD = 1.54).

In the validity studies of the instrument, professional views were consulted for face validity and content validity. While the questionnaire for students' visual literacy was being developed, literature review was conducted and an item pool consisting of 43 items was formed. Taking into account the professional views of visual literacy scale, a 5-point likert type scale was applied for referring to the level of evaluation. In the validity studies, initially 5 expert were determined in order to consult for face and content validities. The questionnaire was presented to the academicians from departments of education technology, psychological counselling, assessment and evaluation, and Turkish language, in order to consult for their views. Taking into account the views and critiques, the questionnaire items were subjected to required revisions and deletions. Accordingly, the questionnaire was formed with 29 items assessing students' qualifications in visual literacy and the subsequent reliability and validity studies were conducted using this form. The reliability and validity studies were conducted with the study sample. First of all, exploratory factor analysis (with principle component analysis method) was applied for construct validity. The results of the exploratory factor analysis yielded 6 factors. For questionnaire reliability, internal consistency coefficients were calculated. The internal consistency coefficient of the questionnaire was found to be .94, indicating that the psychometric properties of the questionnaire are within the acceptable limits.

To conclude, the questionnaire for qualifications in visual literacy developed in this study is a reliable and valid instrument that can be used for determining university

students' qualifications in visual literacy. Questionnaire for visual literacy can be utilized in the literature considering the assessment of students' qualifications for visual literacy. It is recommended that, by using this instrument, students' qualifications in visual literacy, the dimensions in which their visual literacy levels are qualified, and whether there is a difference in the qualifications and opinions for visual literacy in terms of demographic variables can be examined.
Keywords: Visual literacy, validity, reliability

Introduction

The concept "literacy", which is defined as "being literate" (Turkish Language Association, 2012) provides a meaning other than functional literacy when it is used as a suffix. The concept "literacy" means to possess knowledge and skills in the related discipline. Examples may include computer literacy, digital literacy, technology literacy, media literacy, critical literacy, web literacy, and visual literacy.

With the increase in knowledge and new communication technologies, multiple literacies came up. Literacy of published and written material which includes verbal communication is not adequate for keeping up to date and increasing the quality of life. It is needed to possess new literacies like media literacy, computer literacy, cultural literacy, social literacy, environment literacy, audio literacy, and visual literacy (Burmark, 2002; Kellner, 2001; Stokes, 2001).

"Visual literacy"; is defined as the power of giving meaning to and building up similar messages for visual messages. As being implied, visual literacy consists of the actions of "reading" and "writing". In other words, visual literacy is a process that is made up of understanding (reading) and explicating (writing). The concept of visual literacy is first used in the late 1960s (Avgerinou, & Ericson, J, 1997; Debes,1968).

International Visual Literacy Association (IVLA) is the first that accepted the visual literacy definition that was proposed by Debes (1968) and still uses this definition. According to Debes (1968), "*Visual literacy is the name given to a couple of visual efficiencies that is developed by the individual's utilization of visual sensation. The development of these efficiencies is the basis for learning. The individual who possesses these efficiencies has the improved skills for discriminating and interpreting visual motions, objects, symbols, and other things in the environment. By creatively using these efficiencies, the individual communicates with other people and uses visual communication more effectively"* (IVLA, 2011).

There are different definitions of visual literacy in the literature. In order to intensify and unite these different approaches, International Visual Literacy Association (IVLA) has noted four formal definitions (Pettersson, 1993).

a) An individual's development of her/his visual ability by integrating her/his visual and other sensation organs.
b) Learning the ability to interpret the communication and composing messages by using visual images.
c) The ability to convert verbal language to visual image and vice versa.
d) The ability to conduct research in order to evaluate visual information in the visual environment (Pettersson, 1993).

In the today's information society, the use of visual materials/items makes it necessary for the individuals to become visually literate. Visual literacy is welding to a couple of seeing and viewing capabilities (Robertson,2007). This ability is improved by seeing and concurrently integrating with other sensational experiences. An individual who has a developed visual literacy has the capability of discriminating and interpreting visual actions, objects, symbols and all of the natural and artificial things in the environment (Bangir, 2008). The visually literate individuals can read visual messages, join visual language expressions, and translate visual material to verbal (Robertsen, 2007). The characteristics that the visually literate individual should possess are as follows (Bunmark 2002; İşler, 2002; Roblyer, 1998):

- Interpreting, understanding, and liking the meanings of visual messages
- Communicating more efficiently by applying the basic principles and concepts of visual design
- Producing visual messages by using computer and other technologies
- Utilizing from visual thinking in order to conceptualize solutions for problems
- Communicating more efficiently by both applying and analyzing the basic principles and concepts of visual design
- Producing effective visual messages by using traditional methods, computer, and other technological devices
- Utilizing from visual thinking in order to develop conceptual solutions to the encountered problems
- Perceiving subliminal messages in the pictures used in the advertisements and other contents
- Understanding and interpreting the meanings of visual messages

- Communicating more efficiently by using basic principles and concepts of visual design
- Producing visual messages by using computer and other technologies
- Utilizing from visual thinking for providing solutions to the conceptualization problems

The visual literacy, which has a scope and quality that is subject to continuous change in parallel with the technological developments, has a language approach that possesses original rules and functions. It has become an obligation to learn how to read and understand the compounds of visual language; likewise it is an obligation to learn the meanings of written words and texts. Today, among the basic skills that are needed to be taught in order to prepare an individual for a life where visuality dominates, visual literacy skill has an important place (Akpınar, 2009). Accordingly, visual literacy is defined as a composition of skills. Together with defining, regulating, using, and interpreting visual objects, internalization of analytic thinking, problem solving, and critical and creative thinking skills loom large. Besides, the importance of visual literacy can be conceived in terms of giving meaning and utilizing from the visual information (paintings, graphics, pictures, maps, figures, symbols) that we use in daily life. When the research is examined, it is seen that especially in our country, studies related to the application and development of visual literacy has not taken much attention.

The aim of the present study is to develop a reliable and valid instrument for assessing students' visual literacy efficiencies and their points of view regarding visual literacy, in the light of visual literacy literature and related references.

Method

The research is a scale development study. The present section includes information regarding the sample and the scale development studies.

Sample

The sample of the present study is consisted of 506 students (307 females, 199 males) from Sakarya University Faculty of Education. The ages of the students ranged between 17 and 30, with a mean of 19.7 (SD = 1.54).

Scale Development

In order to develop the efficiency of visual literacy scale for students, the literature is reviewed and an item pool consisting of 43 items was produced. Efficiency of Visual Literacy Scale (EVLS) is

developed in order to assess the students' efficiencies of visual literacy. For describing the degree of acceptance of the EVLS items, 5-point likert type scale was utilized taking into account the expert views. On the 5-point likert type answer sheet, the answer choices and accompanying numbers are as follows: *I can do very easily (5), I can do (4), Maybe I can do (3), I can't do (2), Definitely I can't do (1).*

In the validity studies, first of all five experts were determined in order to consult for content and face validity. The scale was presented to the academicians from the departments of education technologies, psychological counseling and guidance, assessment and evaluation, and Turkish language, their consultation for content and face validity was taken.

After making necessary corrections and deletions in the scale items in accordance with the experts' views and critics, the scale consisted of 37 items, and the reliability studies were conducted with these items.

The validity and reliability studies were data gathered from the study sample. The data was first subjected to exploratory factor analysis (principle components method) for construct validity. According to the results in exploratory factor analysis, the items which had eigenvalues over 1, the items which had loadings above .30, the items which had a strong loading on a single factor, and the cross-loaded items that had at least .10 differences between each other, remained in the final version of the scale (Büyüköztürk, 2007).

The reliability of the scale was investigated through internal consistency coefficients. The exploratory factor analysis and internal consistency coefficients were computed with SPSS 19 package program.

Exploratory Factor Analysis (EFA). EFA aims to determine a limited number of definable meaningful structures that are explained in common by lots of variables (items) (Büyüköztürk, 2007). In EFA, whether a scale item remains in the defined factor is determined according to the strength of the factor loading that indicates the relationship between the item and the factor. The items that receive strong factor loadings are conceptualized as the items that assess the structure that was defined by the factor. While the factor loadings are expected to be .45 and higher, the items that receive factor loadings of .30 are also acceptable (Tabachnik & Fidell, 1989). There are several factor analysis methods. Principle axis, maximum likelihood, and multiple grouping techniques are some of the classical factor analysis techniques. However principle components analysis (PCA) is a frequently applied statistic that is relatively easier to interpret.

Findings

In the present study, exploratory factor analysis and internal consistency coefficients were computed respectively as statistical analyses.

Exploratory Factor Analysis (EFA)

In order to investigate the construct validity of the Efficiency of Visual Literacy Scale for Students, exploratory factor analysis was conducted initially. Previous to this analysis, Kaiser-Meyer Olkin (KMO) test was applied in order to test for the adequacy of the sample. The KMO value was found to be .94. According to Büyüköztürk (2007), this value should be higher than .70, therefore the data was decided to be subjected to factor analysis.

Secondly, Bartlett Sphericity Test was conducted in order to evaluate the multivariate normal distribution characteristics of the data. Obtained significant result ($\chi 2$ = 9730,527, p.=.000) indicated that the data was applicable for factor analysis (Büyüköztürk, 2007).

EFA was initially conducted with 37 items. According to the preliminary results, the scale revealed 6 factors which had eigenvalues higher than 1, the lowest item loading was .46, however 8 items had high cross-loadings. These 8 items were deleted from the scale and remaining 29 items were again subjected to factor analysis. The results indicated that the items revealed 6 factors which had eigenvalues higher than 1 and the lowest item loading was .46.

These findings indicate that data was applicable for factor analysis. According to the factor analysis with principle components with unrotated method, there were 6 factors that had eigenvalues higher than 1 and they explained 61.05 % of the total variance. The eigenvalues of the 1., 2., 3., 4., 5., and 6. factors were 4.13, 3.30, 3.23, 3.24, 2.86, 2.84, and 1.96, respectively.

The factor analysis results indicated that factor loadings of the items ranged between .46 and .83. Table 1 presents the factor loadings of the items.

Table 1. Factor Loadings and Explained Variance Values of the Efficiency of Visual Literacy for Students

Items	Loadings					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
m15	.83					
m16	.83					
m18	.69					
m17	.68					
m14	.67					
m13	.58					
m19	.54					
m28		.75				
m27		.75				
m26		.72				
m29		.64				
m32			.72			
m33			.68			
m34			.66			
m31			.60			
m30			.53			
m36				.76		
m35				.67		
m37				.60		
m23				.50		
m25				.48		
m4					.78	
m2					.73	
m5					.69	
m3					.67	
m1					.46	
m9						.73
m10						.63
m11						.62

Reliability

The internal consistency coefficient of the 29-item Efficiency of Visual Literacy Scale for Students is found to be .94. Internal consistency coefficients for the subscales are as follows: *giving importance to visuality by using office software*: .89, *illustrating published visual materials*: .83, *visual interpretation*: .86, *discriminating daily encountered visual messages*: .78, *producing visuality by utilizing from tools*: .77, and *perceiving messages in the visuals*: .68. These obtained values indicate high reliability for the scale.

Results

In the present study, Efficiency of Visual Literacy Scale for Students was developed and the psychometric properties were investigated. The items of Efficiency of Visual Literacy Scale for Students were subjected to exploratory factor analysis and a 6-factor structure was occupied. According to the results of the exploratory factor analysis, 29-item and 6-factor solution was decided to be theoretically and statistically compatible. In order to test for the reliability, internal consistency coefficients were computed, indicating that the scale could be employed reliably.

The factor distribution of the scale items was determined as follows: *giving importance to visuality by using office software(factor 1)* : 13., 14., 15., 16. 17., 18., and 19. items, *illustrating published visual materials(factor 2)*: 26., 27., 28., and 29. items, *visual interpretation(factor 3)*: 30., 31., 32., 33., and 34. items, *discriminating daily encountered visual messages(factor 4)*: 23., 25., 35., 36., and 37. items, *producing visuality by utilizing from tools(factor 5)*: 1., 2., 3., 4. and 5. items, and *perceiving messages in the visuals(factor 6)*: 9., 10., and 11. items.

In the Efficiency of Visual Literacy Scale, it is expected from students to determine their frequencies of having the mentioned efficiencies. The lowest score that could be obtained from the dimensions of the scale is 29 and the highest score is 145. Higher scores indicate higher efficiency in visual literacy.

Discussion and Implications

Visual literacy is an important literacy for the people of 21th century. In order to develop a teaching framework and curriculum and assessing the developmental period or existent level of students, this scale a essential first step as well.

Visual Literacy Scale that was developed within the scope of the present study is a reliable and valid instrument for assessing university students' efficiencies in visual literacy.

Efficiency of Visual Literacy Scale is an employable instrument that can be utilized in the literature for assessing students' efficiencies in visual literacy. By using this instrument, it is expected to assess students' display of their efficiencies in visual literacy, in which dimensions their visual literacy is efficient, The scale can be used comperative studies to find that if there is any difference in visual literacy levels according to students charecteristics.

Reference

Akpınar,B. (2009). "An Evaluation of Visual Reading and Presentation Learning Domain in Turkish Language Curriculum in the 1 st – 5 th Years of Primary School", Education and Science, (34), 154, 37-49.

Avgerinou, M., Ericson, J., (1997). A review of the concept of visual literacy. *British Journal of Educational Technology 28*, 280-91.

Avgerinou, M. D. (2007). Towards a Visual Literacy Index. Journal of Visual Literacy, 1(27), 29-47.

Bangir,G. (2007). "Visual Literacy and Instructional Technology" Yüzüncü Yıl Üniversitesi, Eğitim Fakültesi Dergisi Cilt:V, Sayı:II, 74-102.

Burmark, L. (2002). Visual literacy: Learn to see, see to learn.Alexandria, VA: Association for Supervision and Curriculum Development.

Debes, J. (1968), "Some Foundations Of Visual Literacy", *Audio Visual İnstruction*, 13, 961-964.

Büyüköztürk,Ş.(2007). Veri analizi el kitabı. Ankara: Pegem A Yayıncılık.

International Visual Literacy Association (2011). What is "Visual Literacy?".Web: http://www.ivla.org/org_what_vis_lit.htm. Retrieved 20.04.2011

İşler,A. (2002). Günümüzde Görsel Okur Yazarlık Ve Görsel Okur Yazarlık Eğitimi,Uludağ Üniversitesi Eğitim Fakültesi Dergisi, Vol. 15 No.1.

Kellner, D.(2001). New Technologies/New Literacies: Reconstructing education for the millennium. International Journal of Technology and Design Education 11, 67- 81, Kluwer Academic Publisher. Printed in the Netherlands.

Pettersson, R. (1993). Visual information (2nd ed.). Englewood Cliffs, NJ: Educational Technology Publications.

Robertson, M.(2007). Teaching Visual Literacy in The Secondary English/Language Arts Classroom: An Exploration Of Teachers' Attitudes, Understanding And Applicatıon, Doctor of Philosophy, Department of Curriculum and Instruction, Kansas State Unıversity.

Roblyer, M. (1998). Visual Literacy: Seeing a New Rationale for Teaching with Technology. Learning & Leading With Technology, 51-54.

Stokes, S. (2001). Visual Literacy İn Teaching and Learning: A Literatüre Perspective. Electronic Journal For The İntegration of Technology in Education, Vol. No.1 (p.10-19)

Tabachnick, B. G., & Fidell, L. S. (1989). Using multivariale statistics (2nd ed.). Cambridge: Harper & Row.

Turkish Language Association (2012).Büyük Türkçe Sözlük, http://www.tdk.gov.tr

Appendix

GÖRSEL OKURYAZARLIK YETERLİLİKLERİ ÖLÇEĞİ

Madde Numaraları		Kesinlikle Yapamam	Yapamam	Az Çok Yaparım	Yaparım	Kolaylıkla Yaparım
Ofis Yazılımları Kullanarak Görselliğe Önem Verebilme						
1 (m13)	Yazılarımda konu başlıkları kullanırım					
2 (m14)	Yazılılarımda madde imleri kullanırım					
3 (m15)	Yazılarımda grafik kullanırım					
4 (m16)	Yazılarımda tablo kullanırım					
5 (m17)	Yazılarımda resim ve fotoğraflar kullanırım					
6 (m18)	Yazılarımda çizim kullanırım					
7 (m19)	Yazılarımda uygun yazı tipleri kullanırım					
Basılı Görsel Materyalleri Tanımlayabilme						
8 (m26)	Grafiklerdeki desenleri tanımlarım					
9 (m27)	Görsellerdeki karmaşık şekilleri tanımlarım					
10 (m28)	Haritalardaki özel işaretleri anlarım					
11 (29)	Harita yardımıyla yolumu bulurum					
Görsel Yorumlayabilme						
12 (m30)	Kavramları görsel şekillerle ifade ederim					
13 (m31)	Yazılarımı görsel olarak rahatlıkla okunabilecek şekilde düzenlerim					
14 (m32)	Yazdığım yazıların güzel görünmesine dikkat ederim					
15 (m33)	Resim ve fotoğrafları yorumlarım					
16 (m34)	Resim ve fotoğraflar için anlam üretirim					
Günlük Hayatta Karşılaşılan Görsel Mesajları Ayırt Edebilme;						
17 (m23)	Trafik işaretlerinin anlamlarını bilirim					
18 (m25)	Uzaktan kumandalardaki sembolleri anlarım					
19 (m35)	TV'deki akıllı işaretleri(aile, şiddet, korku, cinsellik vb.) bilirim					
20 (m36)	İnternet sitelerindeki logoyu ayırt ederim					
21 (m37)	İnternet sitelerindeki reklamları ayırt ederim.					
Araçlar Kullanarak Görsel Üretebilme						
22 (m1)	Fotoğraf, belge vs. taramak için tarayıcı kullanırım					
23 (m2)	Dijital fotoğraf makinesi kullanırım					
24 (m3)	Bilgisayarda fotoğraflarımı düzenlerim(kesme, renklendirme vs)					
25 (m4)	Dijital video kamerası kullanırım					
26 (m5)	Bir video düzenleme programı ile bilgisayarda video klipleri düzenlerim					
Görsellerdeki Mesajları Algılayabilme						
27 (m9)	Basılı yayınlardaki reklamları incelerim					
28 (m10)	Resim yada fotoğrafların ne ifade ettiğini anlarım					
29 (m11)	Anlatım açısından resimler ve fotoğrafların sınırlılıklarını bilirim					