

Meaningful Learning among Under Graduate Student-Teachers

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Abstract

Learning occupies a very important place in our life. Learning provides a key to the structure of our personality and behaviour. It occurs through listening, reading, observation and experiences. Meaningful learning involves continuous construction of new knowledge and interpretations with previous knowledge. In teacher education programme student-teachers apply various methods and techniques to learn meaningful. There for the aim of the study is to find out the meaningful leaning among undergraduate student-teachers. The investigator applied survey method to collect the meaningful learning behaviour. The size of the sample of the study is 100 second year undergraduate student-teachers from Pondicherry district, among them, 25 were male and 75 were female student-teachers. The data have been collected through administration of the tool-A Scale on Measuring Meaningful Learning of the Learners. The data have been analyzed through statistical techniques. The descriptive analysis shows that there is high meaningful leaning among student-teachers. The differential analysis shows that there is no significant difference between male and female as well as urban and rural student-teachers in their meaningful learning. ANOVA results also shows that there is no significant difference among second year undergraduate student-teachers in their meaningful learning with respect to education qualifications and native languages. This pilot study revealed that the second year undergraduate student-teachers are identical and they have same meaningful learning behavior.

Keywords: Behaviour, Learning, Meaningful Learning, Pilot Study, Training, Teacher Education and Student-Teachers

Introduction

Teacher Education is a process of professional preparation of teachers. It required proper meaningful learning practices during the programme. Meaningful learning is commonly referred to as an intentional effort to connect new information to prior knowledge, especially if the knowledge is relevant and has been experienced before (Driscoll, 2005). The most important implication of this is that learners take an active rather than a passive role in learning. Connecting the new information with known information facilitate the learning becomes meaningful. Proper implementation of meaningful learning training in teacher education creates and constructs the meaningful learning behaviour among student-teachers. This behaviour reflect while teaching-learning process of their learners. To understand and evaluate the meaningful learning among student-teachers required various techniques. In this research the researcher intended to measure learning habit, learning behaviour inside the class as well as outside the class and metacognitive behaviour in learning among second year undergraduate student-teachers.

Meaningful Learning

Meaningful learning is active and constructive, taking place when leaners develop knowledge in response to their environment, reflecting on activity and articulating what they have learned (Ferguson, 2011).

Meaningful learning is usually described in terms of cognitive development and changes in the learner's cognitive structure (Ausubel & Fitzgerald, 1961; Kaya & Akdemir, 2016; Novak, 2002). Meaningful learning contains characteristics of intentional learning, cooperative learning, active learning, authentic learning and constructive learning.

Intentional Learning

Intentional learning initiates the behaviour to achieve the goal. It triggers the cognitive functions of the learner to acquire skills and knowledge attainment and application. It makes the consciousness in every learning process and aims for high quality of learning. In intentional learning the learner is serious and often involving a lot of action in a short period of time to learn difficult concepts.

Cooperative Learning

Students when they cooperate during learning with one another gain more clarity and knowledge on that learning. Students will start to engage themselves and be able to cooperate in doing their tasks and activities with their friends (Akdemir, 2017; Hamdan et al., 2015). Co-operative learning almost always improves affective outcomes. It helps students master traditional skills and knowledge as well as develop the creative and interactive skills.

Active Learning

Meaningful learning requires active individual agency and conscious goal setting. Thus, process that are self-directed, goal oriented, purposeful and immersive are essential (Hakkarainen et al., 2007; Keskitalo et al., 2011, Takkaç et al. 2010). Learners are not passive listeners but play active roles in learning activities, actively manipulating objects and information and observing results from the learning activities. Active learning presents a significant opportunity to maximize learning and support students' meaningful learning experiences.

Authentic Learning

A characteristics of authentic learning experiences is that they are personally relevant to the learner and situated with in a proper social context (Stein, Isaacs, & Andrews, 2004). Hence, meaningful learning

requires meaningful tasks that emerge from an authentic, or at least simulated, context or experience. Students engage in authentic tasks and problems rather than memorizing abstract concepts and ideas; solving real-life problems. Authentic learning is related to the real world activities and complex problems. This type of learning is meaningful as it tends to engage and immerse students' participation in learning activities.

Meaningful Learning in Teacher Education

Teacher education and teachers' professional development have regularly raised the problems of teacher education preparing teachers for delivering a predetermined curriculum instead of supporting their critical reflection and thinking skills (Edwards & D'Arcy, 2004; Edwards & Protheroe, 2003). Enhancement of student-teachers' critical reflection, thinking skills, memory, and problem solving ability and inter-personal skills is possible through their meaningful learning. However, deeper understanding is needed for teacher education students' perception of meaningful learning. Student-teachers may construct their identity as teachers based on their processes of meaning making (Bruner, 1990; Okukawa, 2008). Thus, the quality of their learning is an integral factor in their development as teachers and their teacher identity, as individual learning is inherently linked with changes in social role and identity (Bredo, 1994). Meaningful learning occurs through learning habit, inside the classroom, outside the classroom and meta cognitive behaviour in learning. These meaningful learning behaviour inculcate knowledge, skills and appropriate behaviour among future teachers.

Research Reviews

The following research reviews related to meaningful learning are briefly explained. The research studies show that how student-teacher or pre-service teachers meaningful learning happened during their teacher education programme and how it helped the teacher educators to develop or modified teacher education curriculum and educational policy making.

Minna Korkko (2021) aimed to find out how student teachers' meaning-oriented reflection can

be enhanced with the help of video in a primary school teacher education programme. The data were collected through focus group or individual interviews and audio recordings of supervisory discussions. Content and phenomenographic analysis were conducted. The results showed that the reflection procedure was beneficial for the student teachers in their self-and peer reflection and in the supervisory process.

Tim Fletcher, Deirdre Ní Chroínín, Mary O'Sullivan, & Stephanie Beni (2020) examined pre-service teachers' articulation of their learning through the development of a shared professional language of teaching practice focused on meaningful physical education. Qualitative data gathered from 90 pre-service teachers over four years in Canada and Ireland were analyzed. Framed by a didactical research framework, pre-service teachers used elements of the shared language to articulate why they would promote meaningful experiences in physical education, what the features of meaningful experiences tend to consist of, and how they would use particular strategies to promote meaningful experiences. This research demonstrated how a shared language that reflects a coherent approach in physical education teacher education can support pre-service teachers to access, interpret, and articulate their learning about teaching in ways that support meaningful experiences for pupils.

Leena Aarto-Pesonen & Arja Piirainen (2020) examined the teacher students' meaningful learning in widening learning worlds. This research followed qualitative metasynthesis investigation in students' meaningful learning experiences among and pedagogical teacher education programmes. This research also aimed to provide a wider picture of the frames of students' meaningful learning in and pedagogical teacher education programme. The qualitative analysis revealed three major learning worlds of adult students' meaningful learning, which formed a common system widening from the professional awakening to the transformative community and agency in society. Based on the results, this study argues that in and pedagogical teacher education, which emphasises collaboration and networking in accordance with the current trend in higher education, teacher students may become

empowered participants and active agents in society

Kostiainen et al. (2018) aimed to explore the Interaction Skills in a Group and Network (ISGN) course further in order to outline the basic features of personally meaningful learning in teacher education based on the experience of the teacher students. The qualitative analysis revealed eleven dimensions that make learning experiences meaningful for teacher students. They are: 1) Importance of the phenomenon and the theme; 2) Common goal and commitment; 3) Intensiveness; 4) Linking theory and practice; 5) Daring and taking risks; 6) Becoming heard and seen; 7) Belonging, equality, and roles; 8) Sense of subjectivity; 9) Safety; 10) Authenticity and trust; and 11) Feeling of bafflement and wonder.

Significance of the Study

Teaching is an art to impart knowledge skills and inculcate behaviour among learners. It requires various tactics to enhance learning. Individual differ in their meaningful learning. Every individual follows and adopt their own method to learn meaningfully. Especially in teacher education programmes, the provision of meaningful learning experiences for students is considered critical for ensuring the student-teachers understand what is to be learned (Daves and Roberts, 2010). Examining meaningful learning in the context of teacher education is important in order to gain a more refined understanding of the processes and experiences by which student-teachers construct learning. The essence of meaningful learning is to gain knowledge, skills and behaviour modification of the learner. Meaningful learning is an important concept in teacher education to gain a refined understanding of the process and experience by which student-teachers construct learning. This understanding can help teacher educators to design a meaningful pedagogical practice for richer and relevant learning. It also provides proper knowledge and awareness in teacher education programme to train the student-teachers meaningful learning behaviour in a meaningful way.

Research Questions

1. What are the researches went on meaningful learning?
2. What are the meaningful learning behaviour

- undergraduate student-teachers have?
3. Is there any difference in meaningful learning among undergraduate student-teachers?
 4. Do undergraduate student-teachers learn meaningfully?

- and post graduate arts undergraduate student-teachers in their meaningful learning.
4. There will be no significant difference among Tamil, English and other Indian native languages of undergraduate student-teachers in their meaningful learning

Objectives of the Study

- To find out the existing level of meaningful learning among undergraduate student-teachers
- To find out the existing level of meaningful learning among undergraduate student-teachers based on gender
- To find out the existing level of meaningful learning among undergraduate student-teachers based on location
- To find out the difference between the male and female undergraduate student-teachers in their meaningful learning
- To find out the difference between the urban and rural undergraduate student-teachers in their meaningful learning
- To find out the difference among educational qualifications of undergraduate science, undergraduate arts, post graduate science and post graduate arts undergraduate student-teachers in their meaningful learning
- To find out the difference among Tamil, English and other Indian native languages of undergraduate student-teachers in their meaningful learning

Hypotheses of the Study

1. There will be no significant difference between the mean scores of the male and female Undergraduate student-teachers in their meaningful learning.
2. There will be no significant difference between the mean scores of the urban and rural Undergraduate student-teachers in their meaningful learning.
3. There will be no significant difference among educational qualifications of undergraduate science, undergraduate arts, post graduate science

Method and Material

The investigator in this pilot study has employed survey method to collect data to find out the level and difference in meaningful learning among undergraduate student-teachers. Likert type of questioner on meaningful learning of the learners were administered to collect the data.

Sample

The population of the research is second year undergraduate student-teachers. The sampling technique adapted was a stratified random sampling technique. For a pilot study the sample was chosen from Puducherry district. The size of the sample in the present research was 100 second year undergraduate student-teachers, 50 in Vivekanandha College and 50 in the Pope Johan Pal II College, among them, 25 were males and 75 were females and 48 were urban and 52 were rural student-teachers.

Description of the Tool Used

A Scale on Measuring Meaningful Learning of the Learners

It was constructed and validated by the investigator with the help of the supervisor and subject experts which consists of 62 items. Each item measures the meaningful learning of the Undergraduate student-teachers. In this tool the meaningful learning items are framed under four dimensions goes as Learning Habit, Learning Behaviour in the Class, Learning Behaviour outside the Class and Metacognitive Behaviour in Learning. This tool is in the form of a Likert type scale with five responses. It is full of positive statements.

Pattern of items scoring as follows

Response	Always	Mostly	Moderately	Some-time	Rarely
Scoring	5	4	3	2	1

Validity of the Meaningful Learning Scale

The items were constructed in English language and the developed items were given to subject experts along with the research topic, objectives of research, hypotheses, theories, documents and concepts related to the topic, the developed items were given to subject experts and they were requested to give their suggestion for establishing the validity of the scale. The experts verified and analysed all the particulars. They expressed their satisfaction regarding the items preparation based on the objectives, theories, documents and concepts related to the topic what it is supposed to measure.

Reliability of the Meaningful Learning Scale

The reliability of the tool was established by split-half method. 100 second year Undergraduate students from teacher education colleges in Pondicherry were identified and the developed tool was administered for establishing reliability. The co-efficient of correlation was found out for the two halves of the items in the scale. Therefore, the reliability of the tool was found out by using Spearman-Brown prophecy formula and it was found out to be 0.873.

Analysis of Data

Data were analyzed through statistical techniques such as descriptive statistics, independent 't' test, and ANOVA analysis.

Table 1 Mean and Standard Deviation for Meaningful Learning among Second Year Undergraduate Student-Teachers (Maximum Score: 100)

Meaningful Learning	N=100		Low	Moderate	High
	Mean	S.D			
	215.17	33.76	20 (20%)	22 (22%)	58 (58%)

Table 1 shows that the mean and standard deviation of meaningful learning is 215.17 and 33.76 among undergraduate student-teachers. It is found that the meaningful learning level is (20%) as

low, (22%) as moderate and (58%) are high level. The result revealed that second year undergraduate student-teachers have high level of meaningful learning behaviour in their learning process.

Table 2 Mean and Standard Deviation for Meaningful Learning among Male and Female Second Year Undergraduate Student-Teachers (Maximum Score: 100)

Meaningful Learning	Gender	Mean	S.D	Low	Moderate	High
	Male (N=25)	217.32	35.42	6 (24%)	16 (64%)	3 (12%)
	Female (N=75)	214.45	33.40	14 (18.66%)	51 (68%)	10 (13.33%)

Table 2 shows that the mean and standard deviation of meaningful learning is 217.32 and 35.45 among male undergraduate student-teachers. It is found that the meaningful learning level is (24%) as low, (64%) as moderate and (12%) are high level. The result revealed that male second year undergraduate student-teachers have moderate level of meaningful learning behaviour in their learning process.

It also shows that the mean and standard deviation of meaningful learning is 214.45 and 33.40 among female undergraduate student-teachers. It is found that the meaningful learning level is (18.66%) as low, (68%) as moderate and (13.33%) are high level. The result revealed that female second year undergraduate student-teachers have moderate level of meaningful learning behaviour in their learning process.

Table 3 Mean and Standard Deviation for Meaningful Learning among Urban and Rural Second Year Undergraduate Student-Teachers (Maximum Score: 100)

Meaningful Learning	Gender	Mean	S.D	Low	Moderate	High
	Urban (N=48)	219.35	32.18	9 (18.75%)	32 (66.66%)	7 (14.58%)
	Rural (N=52)	211.30	35.02	10 (19.23%)	34 (65.38%)	8 (15.38%)

Table 3 shows that the mean and standard deviation of meaningful learning is 219.35 and 32.18 among urban undergraduate student-teachers. It is found that the meaningful learning level is (18.75%) as low, (66.66%) as moderate and (14.58%) are high level. The result revealed that among urban second year undergraduate student-teachers meaningful learning behaviour is moderate.

It also shows that the mean and standard deviation of meaningful learning is 211.30 and 35.02 among rural undergraduate student-teachers. It is found that the meaningful learning level is (19.23%) as low, (65.38%) as moderate and (15.38%) are high level. The result revealed that among rural second year undergraduate student-teachers meaningful learning behaviour is moderate.

Table 4 Independent sample ‘t’ test between the Mean scores of Boys and Girls Second Year Undergraduate Student-Teachers on Meaningful Learning

Meaningful Learning	Boys (N=25)		Girls (N=75)		Calculated ‘t’ Value
	Mean	S.D.	Mean	S.D.	
	217.32	35.42	214.45	33.40	

**Not significant at 0.05 level

From table 4, it is inferred that the ‘t’ value obtained between male and female second year undergraduate student-teachers in their meaningful learning (0.335) is not significant at 0.05 level. So it is revealed that there is no significant mean difference

between male and female second year undergraduate student-teachers in their meaningful learning. This indicates that male and female student-teachers are identical in their meaningful learning behaviour.

Table 5 Independent sample ‘t’ test between the Mean scores of Urban and Rural Second Year Undergraduate Student-Teachers on Meaningful Learning

Meaningful Learning	Rural (N=48)		Urban (N=52)		Calculated ‘t’ value
	Mean	S.D.	Mean	S.D.	
	219.35	32.18	214.45	33.40	

**Not significant at 0.05 level

From table 5, it is inferred that the ‘t’ value obtained between urban and rural second year undergraduate student-teachers in their meaningful learning (1.193) is not significant at 0.05 level. So it is revealed that there is no significant mean difference

between urban and rural second year undergraduate student-teachers in their meaningful learning. This indicates that urban and rural student-teachers are identical in their meaningful learning behaviour.

Table 6 ‘F’ test among Undergraduate Science, Undergraduate Arts, Postgraduate Science and Postgraduate Arts Educational Qualifications of Second Year Undergraduate Student-Teachers on Meaningful Learning

Meaningful Learning in Education Qualifications Aspect	Source of variation	Sum of squares	Mean square variance	df	Calculated ‘F’ Value
	Between	1336.370	445.457	3	
	Within	111501.740	1161.476	96	

**Not significant at 0.05 level

From table-6, it is inferred that the ‘F’ value obtained among undergraduate science, undergraduate arts, postgraduate science and postgraduate arts educational qualifications of second year Undergraduate student-teachers meaningful learning (0.384) is not significant

at 0.05 level. So it is revealed that there is no significant difference among under graduate science, undergraduate arts, postgraduate science and postgraduate arts educational qualifications of second year undergraduate student-teachers in their meaningful learning. This indicates that the

educational qualifications did not differ among undergraduate student-teachers meaningful learning. They have same meaningful learning behaviour in their learning process.

Table 7 ‘F’ test among Tamil, English and Other Indian Native Languages of Second Year Undergraduate Student-Teachers on Meaningful Learning

Meaningful Learning in Language Aspect	Source of variation	Sum of squares	Mean square variance	df	Calculated ‘F’ Value
	Between	1877.369	625.790	3	
Within	110960.741	1155.841	96	0.541**	

**Not significant at 0.05 level

From table-7, it is inferred that the ‘F’ value obtained among Tamil, English and other Indian native languages of second year undergraduate student-teachers meaningful learning (0.541) is not significant at 0.05 level. So it is revealed that there is no significant difference among Tamil, English and other Indian native languages of second year undergraduate student-teachers in their meaningful learning. This indicates that all native language students did not differ in their meaningful learning. They have same meaningful learning behaviour in their leaning process.

Findings

1. It is found that the second year undergraduate student-teachers have high level of meaningful learning behaviour in their learning process.
2. It is found that the male and female second year undergraduate student-teachers have moderate level of meaningful learning behaviour in their learning process.
3. It is found that the urban and rural second year undergraduate student-teachers have moderate level of meaningful learning behaviour in their learning process.
4. It is found that there is no significant mean difference between male and female second year undergraduate student-teachers in their meaningful learning behaviour.
5. It is found that there is no significant mean difference between urban and rural second year undergraduate student-teachers in their meaningful learning behaviour.
6. The ‘F’ value obtained among undergraduate science, undergraduate arts, post graduate science and post graduate arts educational qualifications of second year Undergraduate student-teachers

in their meaningful learningbehaviour is not significant.

7. The ‘F’ value obtained among Tamil, English and other Indian native languages of second year undergraduate student-teachers in their meaningful learning behaviour is not significant.

Discussion

Today’s field of education includes the relevant concept of “meaningful learning”, which, for all aspects of learning, requires a different attitude than the traditional educational thought patterns. Meaningful learning concept is a learning process that combines several teaching and learning activities such as collaborative and constructive. Teacher education and teachers’ professional development created by various training programme among them student-teachers meaningful learning behaviours was an important concept to training the future teachers. Enhancement of student-teachers critical reflection, thinking skills, memory, and problem solving ability and inter-personal skills is possible through their meaningful learning. However, deeper understanding is needed for teacher education students’ perception of meaningful learning. Meaningful learning occurs through learning habit, both inside the classroom and outside the classroom and metacognitive behaviour in learning. It is concurred with the research findings of Deirdre Ni Chroinin, Tim Fletcher and Mary O’Sullivan (2018). They found that the five pedagogical principles that reflect how pre-service teachers (PSTs) were supported to learn how to facilitate meaningful physical education experiences. Pedagogies included planning for, experiencing, teaching, analyzing, and reflecting on meaningful participation. Implementing pedagogies aligned with these five pedagogical principles helped participants

learn why meaningful participation should be prioritised as well as how to facilitate meaningful physical education experiences.

Conclusion

Leaning creates concrete knowledge, skills and problem solving behaviour among learners. It is possible through when learners learn meaningfully. Meaningful learning generates consciousness, interest, active response and intensive learning behaviour. Understanding the meaningful learning behaviour among undergraduate student-teachers helps the teacher educators to construct various strategies to train student-teachers learn meaningfully. It also gives awareness among educational policy makers, educators and teacher educators to prepare future teachers in an effective way. This research shows that second year male and female as well as rural and urban Undergraduate student-teachers have moderate level of meaningful leaning behaviour in their leaning and they are identical. Teacher education programme required various meaningful learning training strategies to enhance student-teachers meaningful learning behaviour in their learning.

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