Sustaining Constructive Learning Environment: The Role of Multi-sources Regulation

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Abstract

Sustaining constructive learning environment is a multi-sources need progression. It occurs better when the diverse sources that are necessary are present and operating simultaneously. How learners differ in using their learning environment and how these differences may beneficial to learners? This paper discuss the data emerges from the questionnaire and semi-structured interview that illustrates reflections concerning to what extent multi-sources have contributed in developing learners teaching knowledge. A finding shows that different types of sources are necessary in the learning process. In addition, the finding indicates that knowledge developed via experiential activities is of the greatest importance for the learners.

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1. Introduction

Facilitating and motivating students learning environment has been a primary concern of the constructivist movement since long before. The essential core of constructivism is that learners actively construct their own knowledge and meaning from their experiences and environments (Fadzilah, Habibah & Aminuddin, 2008; Fosnot, 1996; Steffe & Gale, 1995). People make sense out of their world by constructing information from the environment and assimilating it into their pre-existing schemas and
understandings (Fadzilah, Jon Scaife & Nurul, 2010; Fadzilah & Jon Scaife, 2008; Bransford & Vye, 1989). Criticisms of constructivism often focus on the lack of structure provided to students, however many constructivist educators insist on a structured environment in which students’ knowledge construction can be facilitated. What are the implications of constructivism for educator in relation to facilitating learners’ learning? Although constructivism is a theory about knowing and learning, it has many practical applications and implications, some of which concern the classroom (Zemelman, et al., 1993). Rather than teaching by telling, the constructivist approach to teaching would provide support for the knowledge construction process. A constructivist approach to education deal with the issues of content, process and mediation (sources) of learning. Oosterheert et al. (2002) raised an issue of learning sources or environment in the process of learning. They claim that there is a need of differential support in students’ learning. In order to educate effectively, or provide learning opportunities, educators need a knowledge of how learners differ in using their learning environment and how these differences may be more or less beneficial to learners (Aldridge, Fraser & Ntuli, 2009). Hence, this paper illustrates reflections concerning of how multi-sources have contributed to the students’ learning environment in sustaining knowledge of teaching.

2. Literature Review

The concept of sources is defined as a ‘means available to achieve an end’ or a thing that can be turned to for help, support, or consolation when needed (Wehmeier, 2000, p. 1076). Clearly, learning sources are whatever can be defined as facilitating the process of learning to teach. In terms of learning resources, it is necessary to be flexible in looking at the opportunities available, clears in the use of them, and determined to think through the implications of their use. The traditional resource environment in higher education has consisted of the library and textbooks. With the development of computer facilities, audio-visual, and multimedia resources, the environment is much richer and more complex (Higgins et al., 1996). Learning space, support staff and teaching staff all play an important role in the learning environment as physical learning materials. In the case of learning to teach, these would include the traditional print sources of books and journals, slides and photographs, audiotape, video, practical kits, remote databases, and telecommunications systems including the internet, e-mail, teleconferencing, and satellite TV. Other sources include museums, art galleries, local industry, invited experts and people (for instance, as sources of oral history).

2.1 Knowledge Sources Continuum

Richard (1993) suggests that before examining the knowledge base in teaching, it is helpful to identify a professional knowledge sources continuum. A knowledge sources continuum consists of a variety of experiences and activities by which, or because of which, the learner develops knowledge of the profession (Figure 1). At one end of the continuum are those experiences that allow the learner to develop knowledge because of teaching. Schön (1983) refers to this as knowledge in action. At the other end, the sources of knowledge are very different, and generally consist of lectures and reading. In between these two extremes are varieties of activities that may allow the learner to develop knowledge closer to one end or the other. For example, microteaching or mock teaching allows the learner to develop knowledge about teaching that is close to, but not the same as, teaching in an actual classroom with real students. Observing a second language classroom also is a source of knowledge about teaching, but is rather different from reading about teaching or actually teaching.
It is clear that the different sources of knowledge allow the learner to develop different types of knowledge about subject matter or teaching approaches. The knowledge that develops from ‘hands-on activities’ such as teaching practice or micro teaching may be termed ‘experiential knowledge’, while knowledge that develops from sources at the other end of the continuum such as assignments, lectures or other reading sources can be thought of as ‘knowledge acquired’ or ‘received knowledge’ (Renninger, 2009).

2.2 A Multi-sources Regulation

According to Iran-Nejad (1990) the growth of teaching knowledge is a multi-sources process. It occurs better when the diverse sources that are necessary are present and operating simultaneously. An analogy can be found in the factors a tree needs to survive: the sources reside in the air, the ground, and in the body of the tree itself. As well as the process of learning to teach, it requires multiple accesses to various sources of information. This process also involves integration of information from various sources. Therefore, it would be necessary for educators or researchers to gather information as to what sort of sources are essential for learners in developing teaching knowledge. A growing number of theoretical as well as empirical studies have demonstrated that the human brain can better be conceived of as a multi-source processor. Because growth is a multi-sources process, it occurs best when the diverse sources that are necessary are present simultaneously. For trees, the sources reside in the air, the ground, and the body of the tree itself. Learning is multi-sources precisely in an analogous sense. The multi-sources nature of learning would require multiple sensory modalities for concurrent access to qualitatively diverse sources of information (Iran-Nejad, 1994).

This view proposes three sources of regulation that play a role in knowledge construction. That is, external sources, active internal sources and dynamic internal sources (Oosterheert and Vermunt, 2003; Iran-Nejad, 1994). External sources of regulation (ESR) are sources outside the learners that may provide new information, such as supervisors, mentors, colleagues, teaching experiences, library or internet resources. Internal sources of regulation (ISR), also called self-regulation, or internal regulation refer to the capacities of the human brain to process information and to reconstruct existing knowledge. Howard-Rose and Winne (1993) claim that many empirical studies show that effective learners are essentially self-regulator. Self-regulation is also increasingly adopted as a valuable concept for the design of teacher education (Vermunt and Verloop, 1999). ISR is then divided into two, that is, active internal sources (ISRa) and dynamic internal sources (ISRd). Whereas ISRa deliberately focuses on new information, ISRd will spontaneously reconceptualise prior understandings (Oosterheert and Vermunt, 2003).

The theory of external sources and active internal sources is very commonly accepted in the current literature (Oosterheert and Vermunt, 2003). They are compatible with views that knowledge construction depends on the learning activities that learners employ (Iran-Nejad et al., 1990), and are suggested in the literature on reflection that guides many education institutions. The idea of ISRa and ISRd is compatible or in line with the concept of assimilation and accommodation proposed by Piaget. However, the third source, ISRd, which is argued to be involved in knowledge construction, has yet to offer more than limited explanation (Iran-Nejad, 1994; Reynolds et al., 1996). According to Iran-Nejad (1994), in
traditional perspectives two assumptions seems to govern learning: first, that the external is the one and only source of learning and second, it occurs only under ISRa. These two assumptions limit the domain of learning to commit the role of many sources that must contribute to it simultaneously.

From the above point of view, Oosterheert and Vermunt (2003) claimed that the external sources (readymade) such as books, classroom lectures, classroom notes, or libraries place a higher demand on the learner than ISR. A classroom presentation often follows an outline and consists of verbal definitions, explanations, examples, questions, demonstrations, and summaries. This phenomenon is highly popular in a traditional classroom instruction where the words of the educator, words in print, and other activities, including required memorization, are the major tools for ‘transferring information’ to learners. There is little room left for the ISR processes of the learner to engage in creative and independent knowledge construction. Learners who do not remember well what the teacher said or the content of books may be considered to have memory and learning problems. In this case, most of us have overlooked the fact that memorizing the knowledge others have created is often not successful because knowledge is not a ready-made, transferable product but, rather, a product of the learner's thinking created in a multi-sources context (Iran-Nejad, 1995). Thus, it is worth taking note that the effectiveness of learning environment depends largely on the effectiveness of other sources of regulation. It is also recognized that the ability or readiness of learners to efficiently involve all three of these sources in their learning may depend on their perception and reaction to the actual environment (Oosterheert and Vermunt, 2003).

3. Methodology

As an effort to contribute to the knowledge of facilitating educators to enhance constructive learning environment, a descriptive case study has been employed. The study was conducted among 74 final year student teachers at one of the education faculties in Malaysia. Two instruments were used in this study namely questionnaire and semi-structured interview guided question. The questionnaire, besides gathering participant’s backgrounds, was also intended to elicit respondents’ self-rating on sources of teaching knowledge development. Based on the significant feedback from the questionnaire, eight respondents were identified as potential participants for further interview. During the semi structured interviews, participants were asked to reflect on their sources of teaching knowledge. These sessions had been recorded by digital audio recorder to ‘ensures that the whole interview is captured and provides complete data for analysis so cues that were missed the first time can be recognized when listening to the recording (Mathers, Fox & Hunn, 1998, 2002)’. Audio data then transcribed to be analyzed with open coding and systematically searched for themes emerged.

4. Results and Discussions

Based on the multi-sources view, teaching knowledge development based on student teachers’ background, experiences and their learning environment. Different types of knowledge are necessary include the practicum, hands-on activities, assignments, lectures, tutorials, library and computer resources, professional development activities, discussion with colleagues, and micro-teaching, among others. Some represent experiential knowledge (teaching practice, hands-on, etc.), while others are received knowledge (assignments, lectures, etc.). There were two methods of data gained in this study in determining the contribution of multi-sources to the teaching knowledge development i.e. student teacher perspective based on questionnaire survey and student teachers’ reflection based on semi-structured interview. The data that emerges from the questionnaire and the semi-structured interview illustrates to what extent multi-sources have contributed to their teaching knowledge.
4.1. Questionnaire Survey on Multi-Sources and Teaching Knowledge Development

The questionnaire consisted of questions related to how multi-sources contributed to teaching knowledge development. From Table 1 it can be seen that the practicum was the largest contributor to teaching knowledge (M=4.3). Substantial contributions were also made by micro-teaching (M=3.9), experiences as a school student (M=3.8), discussions with colleagues (M=3.8), and tutorials (M=3.8). Those factors making the smallest contributions were lectures (M=3.6), assignments, (M=3.6), and computer sources (M=3.6).

Table 1: Contribution of Multi-sources to the Development of Teaching Knowledge

<table>
<thead>
<tr>
<th>Source</th>
<th>Contribution (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3.6</td>
</tr>
<tr>
<td>Tutorials</td>
<td>3.8</td>
</tr>
<tr>
<td>Assignments</td>
<td>3.8</td>
</tr>
<tr>
<td>Micro-teaching</td>
<td>4.3</td>
</tr>
<tr>
<td>Practicum</td>
<td>3.6</td>
</tr>
<tr>
<td>Library</td>
<td>3.6</td>
</tr>
<tr>
<td>Own reflection</td>
<td>3.8</td>
</tr>
<tr>
<td>Discussion</td>
<td>3.8</td>
</tr>
<tr>
<td>Experiences</td>
<td>3.8</td>
</tr>
<tr>
<td>Prof. dev. activities</td>
<td>3.7</td>
</tr>
</tbody>
</table>

The least important resource contributions were lectures and assignments. This would indicate that knowledge developed from hands-on activities such as teaching practice or micro teaching - that is, experiential knowledge - was of the greatest importance to the student teachers while knowledge that developed from sources such as assignments and lectures—that is, knowledge acquired or received knowledge - was least important to this particular group of student teachers. Thus it was concluded that computer resources, class assignments, and library sources did not contribute significantly to teaching knowledge development. It became clear in this study that the one resource that significantly contributed to student teacher knowledge development was the practicum itself. However, micro-teaching, experiences as a school student, discussions with colleagues and professionals, and tutorials also made substantial contributions to participants’ teaching knowledge. Lectures, assignments, and computer sources were simply not highly valued.

4.2. Semi-structured interview on Multi-sources and the Facilitation of Learning Environment

The semi-structured interview guided by five questions related to the availability and use of various sources to facilitate students’ learning. Taking the responses to the eleven respondents in their entirety, several themes emerged, and the purpose of this section is to discuss those themes. The first theme related to taking the time to get to know the students on a personal level. This was mentioned by many student teachers on interview questions related to designing lessons (i.e. assessing students knowledge), diversity (i.e. getting to know students on an individual basis so that their strengths and weaknesses could be determined), and in terms of motivating students and increasing levels of cooperation.

Second theme to emerge related to the sources that the interviewees used. While there were some common sources (e.g., reference books, peers, and supervisors/experienced teachers), the most striking...
fact was the diversity of sources used. In addition to the common sources (books, peers, and supervisors), respondents indicated that they used the internet, newspapers, their own personal experiences, their training at the university, the course syllabus, and many other sources on which to understand and present their material. Thus, the respondents were clearly not relying on only one or two sources of information, but making use of any and all sources that were available to them.

A final theme to emerge from the interviews was that the highest way to become a good educator was to gain practical experience. Throughout the interviews, respondents mentioned things that they had learned while teaching. Clearly, effective preparation is important for new educators, but the bulk of the respondents felt that they learned much more while actually teaching than they learned during their teacher education programme. One way to facilitate the development of effective educators, therefore, would be to give them more practical experience during their teacher education programme.

It is important to understand that the sources of knowledge allow developing different types of knowledge about teaching (Reynolds, 1995). In order to understand the implication of these finding for developing and enhancing sources of student teachers’, it is useful to explore possible explanation of why they perceive some sources of learning be more effective than others in the development of their professional knowledge and skills. At a same time it is important to note that it is difficult to determine exactly what types of knowledge student teachers’ value and demand most often (Fadzilah, Jon Scaife, Nurul Aini & Habibah, 2010). Knowledge demands at any particular times are likely to vary with specific classroom contexts, their experiences within those contexts, and their career stages and personal development concern (Smylie, 1989).

5. Conclusion

Constructive learning environment holds an assumption that learners actively construct their own set of meaning and understanding; knowledge is not a mere copy of the external world, nor is knowledge acquired by passive absorption or by simple transference from educator to another learner or knower. On the other hand, studies have demonstrated that the human brain can better be conceived of as a multi-source processor. Thus, the learners were clearly not relying on only one or two sources of information, but making use of any and all sources that were available to them. Computers and new communication technologies also have the potential to transform teaching and learning in classrooms because these sources offer new opportunities in gaining knowledge of subject matter or teaching approaches. However, access to the expertise of others is often lacking in teacher programmes. For the student teachers involved in the present investigative research, these sources were not important in this place and time. Most programmes are restricted primarily to printed materials and face-to-face interaction such as through workshops or conferences. Even in those programmes that are not restricted, often student teachers do not avail themselves of these types of sources. Of the greatest importance was a source that would help them build their confidence so that they could face each day with increased self-assurance. Perhaps with more experiences they will learn that the use of additional sources will serve to enrich their deeper understanding and broaden their perspectives of the learning experience in general. Hence, educators must better understand what it takes for different learners to develop teaching knowledge and which sources help different learners grow particularly in line with constructive learning environment.

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