Student Support System in Virtual Learning Environment for Medical Education: McKenna Content Analysis Method

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Abstract

Background: Student support services are a broad and important concept in education, each of which is related to a specific set of hypotheses related to the subject. This lack of theoretical and conceptual ambiguity has led to poor understanding and communication between researchers and policymakers and problems in comparing studies in different fields. The purpose of this study is to explain the student support system in virtual learning environment for medical education.

Methods: This study was a qualitative research. An extensive search in scientific databases was carried out based on predetermined strategies, and 53 documents were reviewed from 1996 until 2019. Data were analyzed based on Hugh McKenna's nine-step approach.

Results: According to the literature review, determining the support services of students in virtual learning, providing academic and non-academic services is the responsibility of students' cognitive, emotional and social needs. These services lead to greater student participation in the process of self-learning and academic achievement, which is done at three levels: (pre-program, learning process and post-graduate support services). Student support services were categorized into conceptual areas (level, dimensions, and purpose) and the relationship between these conceptual areas was identified.

Conclusions: Based on the findings of this study, student support services in virtual learning can be divided into two categories: academic and non-academic with relevant subcomponents. It is recommended that educators and policy makers use these results to facilitate student support for different types of virtual learning.

Background

The Internet provides the basis for new learning environments called "virtual learning"[1]. The world is becoming more interconnected and complex. Online learning is going through a period of rapid and unprecedented change. The following e-Learning trends and predictions for 2020 will help you to get ready for this space [2]. Medical education is a process that continues throughout the life of medical students. The development of information has made medical science knowledge constantly evolving. As a result, the knowledge and skills gained at the end of academic education cannot guarantee the skills needed during the individual's lifetime. Therefore, medical students need to acquire more skills during education such as self-directed learning in order to lifelong learning [3].

According to the benefits of virtual education and its effective impact in medical education, it seems inevitable to incorporate it into the current curriculum, so that conventional methods of teaching are a combination of traditional education and e-learning [4, 5]. Blended learning is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. By using a combination of digital instruction and one-on-one face time, students can work on their own with new concepts that free teachers up to circulate and support individual students who may need individualized attention. "Rather than playing to the lowest common

denominator – as they would in a traditional classroom – teachers can now streamline their instruction to help all students reach their full potential. Working in ablended learning environment requires high flexibility [6].

The width and depth of distance learning depend on the objectives and prospects of this type of education based on upstream policies [7]. For many reasons, such as the complexity of this learning environment, all thelearners cannot perform this responsibility as fully as possible and some of them do not achieve success and satisfaction due to the lack of requirements management [8]. Student support is a generic term used for a wide range of services and offers by institutions to help studentsacquire and develop learning objectives and achieve knowledge, attitude and skills [9].

Support services are a very important element for all educational institutions; however, these services are much more essential in e-learning than face-to-face. One of the most important reasons is that teachers and students are not in a physical environment and distance learning sessions usually require more interpersonal interactions than group interactions [10].

Some learners feel lonely. In addition, some studentsstop attending classor drop out of collegedue to the lack of self-management skills, motivation and a sense of belonging to theirinstitution. To overcome these problems, student support services have emerged as an important element of the distance education system [11]. New courses, although emphasizing active learners, support systems facilitate the learning process through learning tools and services [12, 13]. The development of an organization-based support system is accomplished through a number of techniques. The main focus of this support system is on the satisfaction and facilitation of learners [13]. There is a lot of research showing that comprehensive support for education can lead to academic well-being. Academic well-being is the attitude of students to education. This attitude has meaning in four dimensions: the general attitude to the academic life, the attitude to the teacher, the attitude to the peers and the attitude to the organizational structure of colleges [14]. In many studies, the impact of support service on student's well-being has been demonstrated, but what are the dimensions and components of the concept of support in blended learning? There is very low research in this field and only has focused onwhen the student support service should be activated [15]. There is no specific support mechanism in blended learning, soIn this study, we have tried to use concept analysis to identify the dimensions of student service and to refine basic conceptual components in order to provide a clear and practical definition.

Methods

1-Search strategy concept analysis

The search strategy of this concept analysis included a protocol-driven search. Original articles, as well as theoretical and conceptual articles, were consulted. We looked at peer-reviewed papers in all of the fields.Nine databases were searched (ProQuest, ERIC, Google Scholar, Science Direct, Scopus, and Medline, ISI, ISC and web of science)with the following keywords entered:Support system, Support

service, Education support system, Training Support, Practical or emotional support system, Academic support, Learner support, Student support service, Smart support service,E- support, Faculty support system.The search terms above were combined with the following terms:Distance learning, E-learning, Blended learning, Virtual learning, Distance education, Computer enhanced learning, Online education, Online class.

2-Eligibility criteria

In the review of literature, 1872 related articles available on the databases from 1996 until 2019 were found. We, therefore, had to develop a data management strategy; the search was limited to articles that listed the search terms in their title. At first, abstracts of the study articles were selected, and articles that described the concept or provided evidence related to the concept were selected for the full-text study. No further assessment of the validity or quality of the full text was conducted. All the definitions were screened by two peers from the same research unit who evaluated the definitions' appropriateness. Finally, 53 documents were reviewed. (Fig. 1)

3-Concept analysis

Conceptual analysis is a precise process that attempts to identify, clarify and explain an abstract concept and to distinguish it from similar concepts [16–19]. There are different approaches, in this study, Hugh McKenna approach is used for concept analysis [17]. The analysis was comprised of the 9 steps shown in Fig. 2.

Results

1-Definitions

Support service is a very complex concept: it can be approached from several perspectives (the students, teachers or the education system) that lead to different dimensions. There was nonobvious distinction between "Academic support, Learner support, Faculty support system, Education support system, E-support, Training Support, Smart support service, Support service, emotional support system"in context from reliable sources. At this stage reference phrases are also known as primary concept structures were extracted from the existing documentation, i.e. the exact sentences were quoted. In the next stage, we introduced our interpretation of primary phrases. Then we introduced our interpretation of primary phrases in documentations as the potential attributes that define the concept of support service. Some attributes of concept repeated frequently. This stage was performed with high accuracy and the specific attributes of the concept were extracted.

Therefore, student supportive service in blended learning is to provide academic and non-academic services to the responsivity of the cognitive, affective, and social needs of students. These services lead

to further engagement the student in the process of self-learning and academic achievement, and are performed at three levels: Pre-program, learning process and Post-graduation support services. Based on resources that discussed support service, the main components of this concept were determined as follows: Supportive Service's Levels, Supportive Service's Dimensions, and Supportive Service's purposes (Fig. 3)

1. Levels of Student Supportive Service

The study of the texts showed that this field has three separate parts: Pre-program support services, thelearning process support services and Post-graduation.

Table 1
Levels of Student Supportive Service & References

Levels of Student Supportive Service	References
Pre-program support services	- Kumtepe EG, Toprak E, Ozturk A, Buyukkose GT, Kilinc H, Menderis İA. 2003 [10] - Floyd DL, Casey-Powell D. 2004[20] - Gujjar, A.A., Naoreen, B. Chaudhry, A.H., 2010. [21] - Chatpakkarattana T, Khlaisang J. 2012 [11] - Jain P, Salooja M, Mythili G. 2016 [22] - Sahoo PK.2018 [23]
The learning process support services	- Tait A. 2000 [24] - Kumtepe EG, Toprak E, Ozturk A, Buyukkose GT, Kilinc H, Menderis İA. 2003 [10] - LaPadula M. 2003 [25] - Darojat O, Sunarsih D. 2014 [26] - NurmukhametovN.a, TemirovaA.b, BekzhanovaT.2015 [27] - Arko-Achemfuor. 2017 [9] - Lu P, Luo L. 2017 [28] - Sánchez-Elvira Paniagua A, Simpson O. 2018 [29]
Post-graduation support services	- Floyd DL, Casey-Powell D. 2004 [20] - Dey F, Cruzvergara CY. 2014 [30] - Hayden SC, Ledwith KE. 2014 [31] - Smith KK. 2014 [32] - NurmukhametovN.a, TemirovaA.b, BekzhanovaT.2015 [27] - Kamran Mir. 2016 [33] - Kelkar D.2016 [34] - Young M. 2019 [35]

1-1-Pre- program student support services:

Moreover, institutions in the education sector are expected to use information and communication technologies effectively in order to be successful in educational activities and programs. At this phase,

entry requirements and all rules and regulations of the academic calendar will be announced. TheseItems illustrate the college's commitment to programs and facilitate decision making for students.

1-2-learning process student support services:

The development of a learning support service for distance learning during the academic yearsincludes:1) establishing and improving information media, 2) exploring learning strategies for learners and 3) Access to all digital resources. If support services are further developed, learning outcomes will show a clear improvement [36]. The support system has been described in two different ways:1. individual-oriented (interaction with the individual and his/her own learningsystems) and 2. Intrapersonal interactions (learner-learner, learner-instructor, learner-content-material/interface, etc.) that are both necessary during student life [10].

1-3- Post-graduation student support services:

During this phase, students need services to help them find the job opportunities. Student support services should be user-friendly and learner-centeredhowever, delivering effective and efficient service has always been a major challenge for higher education Managers.

2-Student Supportive Service Dimensions

In the review of literature, student support services include two types: academic and non-academic services. Academic services are supervised by academic staff and are based on university decisions and are related to teaching and learning issues and problems. But non-academic services are centralized services that are not related to the teaching-learning process but improve learning conditions [15]. The following table shows the attributes of each dimension.

Table 2
Dimensions of Student Supportive Service

Dimensions	References	Attributes
Academic Services	Farajollahi,2010 [37] Lee,2013 [38] Stewart,2013 [39] Newberry,2013 [40] Tamulienė,2014 [15]	A. Instructional Services – Registration of Students – Looking After the Admission – Clear Cut Norms – Preparation of Guidelines and Instructions – Degree and Transcript Auditing – Orientation Courses – Academic Advising – Course Offering &Availability – Online Representatives – Learning Material Support – Examination and Evaluation Services B. Tutoring Services – Ways of Communication& Interaction – Online Faculty Advising – Assignment Help – Networking – Contact Tutoring C. Technical Services – Learning Management System – Learning Content Management System – Infrastructure & Facilities D. Library And Bookstore Services

Dimensions	References	Attributes
Non-Academic Services	Pullan,2011 [41]	A. Counseling Services
	Hunte,2012 [42]	– Law Consultations
	Noviyanti,208 [43]	– Academic Counselling
	Gregori, 2018 [44]	– Health Consultations
	Tuquero, 2011[45]	– Job Counselling
		B. General Services
		– Student Help Desk Support
		– Financial Support
		– Disability Services
		– Phone Numbers
		– Language Training
		– Information About Distance Learning Opportunities
		– Accommodation
		– Social Support Services

3-Supportive Service purposes

The purpose of student support is to increase graduation rates and to improve student retention rates. There is competition between institutions to give grants. They also provide opportunities for students to improve their academic performance by motivating students. Supporting and enhancing the student experience from the first contact through to becoming alumni is critical to success in higher education today for both the student and the institution. Student support and services contribute to the quality of their learning experience and their academic success. Ciobanu said:" The student services value needs greater recognition, support, and development in the interests of all students.

Student services contribute to the quality of students learning experience and their academic success, contribute as well at the university dropout rate decrease and to the increase in students' life diversity, encouraging and establishing an open method of making rational decisions and also resolving conflicts and prepare students for active involvement in society" [46].

Table 3
purposes of student Supportive Service

Definition(Purpose of Student Support Service)	References
Responsibility to the cognitive, affective, and social needs of students	– Nsamba &Makoe, 2017 [47]
Scientific success and removal of situational, organizational and information barriers	– Sewart, 1993 [48]
	– Potter, 1998 [49]
	– Brindley J.E, 2014 [50]
	– Rangara 2015 [51]
Student engagement in the learning process	– McLoughlin, 2002 [52]

Discussion

Every day the higher education market is becoming more competitive. Many students are interested in online courses. To stay in the competition, they need to have special program institutions to support students online. Students are seeking to identify the best distance education program that can provide the most services in addition to the quality of education [53]. Student support is a general term used for a wide range of services provided by institutions to help students complete their learning objectives and their course [9]. Student support services are very important elements for all educational institutions, especially e-learning [10]. The development of an organization-based support system is accomplished through techniques. The main focus of this support system is on the satisfaction and facilitation of learners [13]. Wright describes that support for learners isan inevitable element in creating the effective learning experience for distance learning [54]. Thorpe also considers that support is the basis of an open learning system and can respond to the needs of the individual learning process [55]. In addition to studies focusing on the importance of learning support, Gorder noted the support of academic staff for the success of any distance education system [56].

Floyd also reported that educational support is to create a positive interaction environment between learners and staff [20]. Various studies have shown that in successful universities around the world, student support extends from pre-university to post-graduation [57–60]. Helping students to develop and complete a professional resume and advising on interview strategies is need. At some universities, such as Portland Community College, students can pass different job workshops, such as how to succeed in job interviews, decision making, and goal setting. Rio Salado College also provides an electronic self-assessment tool and provides information on the job market in various occupations [20].

Student support services are defined in two ways: academic and non-academic services. Academic services are performed by academic staff and are based on university decisions and are related to teaching and learning issues and problems However, non-academic services are not related to academic topics but they provide the Suitable conditions for the student [15, 48, 61]. Students' needs play an

important role in designing and improving educational systems. The development of a quality management system in higher education is based on the student's expectations will have as customers and evaluating their opinions, especially in the negative, can improve quality [62, 63]. Student support services guarantee academic success. Student support services in the virtual environment are very necessary because in this space the student feels alone [64]. Teacher and student separation affect teaching and learning. A dynamic and active system helps students to not be isolated and decentralized. As a result, it prevents lower levels of motivation, interaction, and laziness [65]. If supportive strategies are not considered in an e-learning system, there will be a rapid decline and an increase in [66].

Limitations

First, the subdivision of dimensions was sometimes subjective and artificial. Secondly, we did not conduct a systematic evaluation of the quality of the included research articles. Thirdly the search was limited to articles that listed the search terms in their title. Finally, we only reviewed English articles.

Conclusion

Working in virtual education requires flexibility [7]. Some students leave online courses because they have low motivation and lack of self-management skills. To overcome all these problems, student support services have emerged for the effective and sustainable distance education system [11]. The institution should provide face-to-face and distance support services.

The student support system can encourage students and faculty in cyberspace [67]. All individuals and structural resources in the distance education system should be considered an integral part of support services. Student support services in this type of education can create positive conditions for the student. Unfortunately, evenexperienced virtual educational institutions are not paying attention to the student support system. Research in this area has been scant and has only focused on when the student support system should be activated [68]. No research has shown that supports is fit to the student's needs [15].

Declarations

Acknowledgements

Authors' contributions

Mirmoghtadaie was involved in data gathering, investigation, analysis, preparing the original draft of the manuscript. Mohammadimehr were involved in data gathering, methodology, investigation, project administration, supervision and reviewing and editing the manuscript. All authors have read and approved the manuscript.

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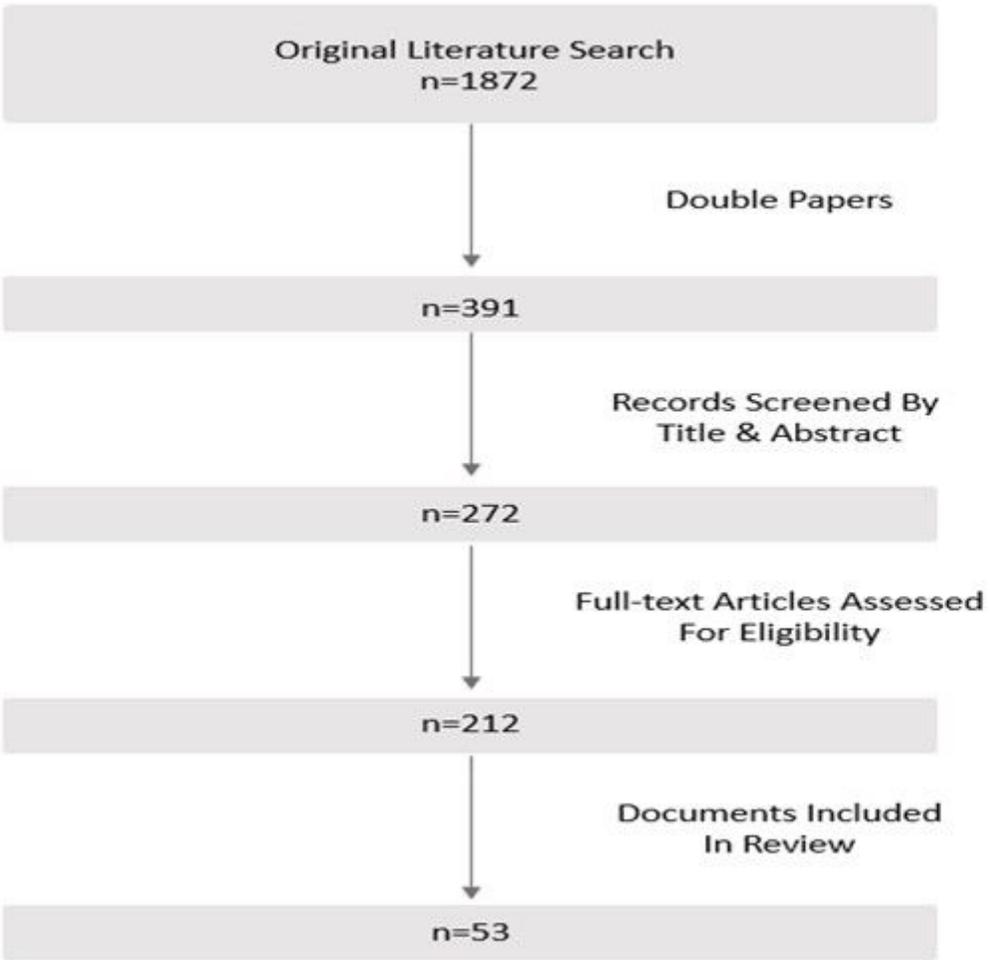
Figures

Figure 1

shows the search process and inclusion of papers in this review.

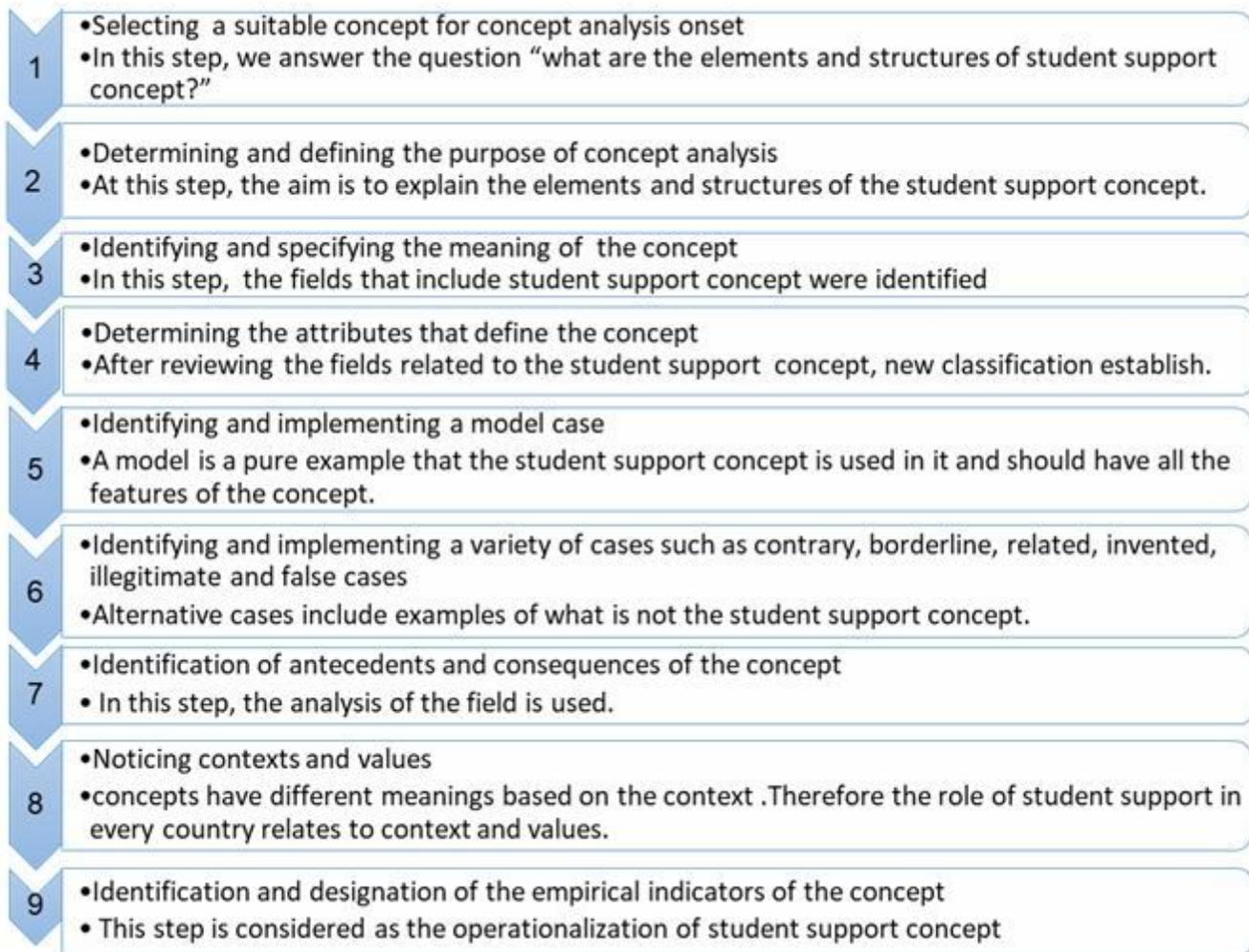|	
1	•Selecting a suitable concept for concept analysis onset •In this step, we answer the question "what are the elements and structures of student support concept?"
2	•Determining and defining the purpose of concept analysis •At this step, the aim is to explain the elements and structures of the student support concept.
3	•Identifying and specifying the meaning of the concept •In this step, the fields that include student support concept were identified
4	•Determining the attributes that define the concept •After reviewing the fields related to the student support concept, new classification establish.
5	•Identifying and implementing a model case •A model is a pure example that the student support concept is used in it and should have all the features of the concept.
6	•Identifying and implementing a variety of cases such as contrary, borderline, related, invented, illegitimate and false cases •Alternative cases include examples of what is not the student support concept.
7	•Identification of antecedents and consequences of the concept • In this step, the analysis of the field is used.
8	•Noticing contexts and values •concepts have different meanings based on the context .Therefore the role of student support in every country relates to context and values.
9	•Identification and designation of the empirical indicators of the concept • This step is considered as the operationalization of student support concept

Figure 2

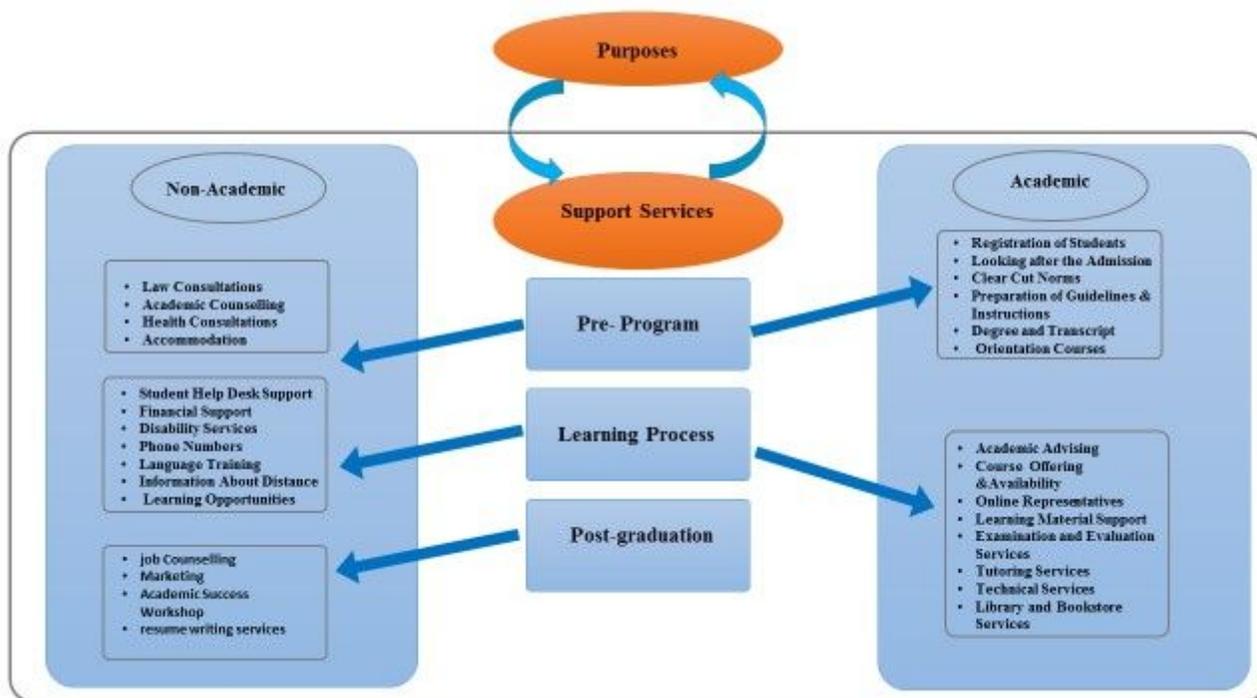Hugh McKenna's nine-step method for concept analysis.

Figure 3

Student Supportive Service in blended learning: Levels, Dimensions and purposes