

EGYPTIAN MIDDLE SCHOOL TEACHERS' PERCEPTIONS OF THE EFFECT OF HENDY'S 4CS MODEL ON STUDENTS' LEARNING ENGAGEMENT

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ABSTRACT

There are many learning theories that have come to explain how people think, process, learn, and apply knowledge. Among those theories are contextualism, connectivism, constructivism, and cognitivism. These four theories have been taken as references of the current proposed Hendy's 4Cs (contextualizing, connecting, constructing, cognitivizing) model for teaching and learning. The model is like a mental journey that takes learner from exploration of ideas and concepts to meaningful learning and long-term memory. Based on importance of teachers' opinions towards what can be used logically and really inside classrooms, the current study aimed at identifying middle school teachers' perceptions of the effect of Hendy's 4Cs model on students' learning engagement. To investigate this main purpose, five sub-questions related to student intellectual, emotional, behavioral, social, and cognitive engagement were presented and interpreted through the study. A five section research scale (regarding the kinds of student engagement) was developed and controlled regarding validity and reliability. After administering the research tool to a random sample of middle school teachers, the research data were analyzed; and then some recommendations were presented based on study results.

KEYWORDS: *Hendy's 4Cs Model for Teaching and Learning, Middle School Teachers, & Student Engagement*

Received: Jan 13, 2017; **Accepted:** Feb 23, 2017; **Published:** Feb 27, 2017; **Paper Id.:** IJESRAPR20177

INTRODUCTION

One of the most important goals of schooling is to help students be engaged in their learning situations either inside or outside classrooms. So student engagement, as a concept and a process, should be focused on through research and practice. According to Fredricks et al. (2004), the concept of engagement can be described as a multidimensional construct of behavioral, emotional, and cognitive dimensions. Regarding the use of different models for more enhancement of student engagement, educators should work hardy and seriously to develop and use new models that help maximizing learning efficiency. In this regard, the current study came to identify the opinions of middle school teachers in respect to importance of Hendy's 4Cs model towards student engagement in their learning situations. The model is based on four learning theories; contextualism, connectivism, constructivism and cognitivism. Contextualism is a learning theory that focuses on learning from multiple real aspects of any learning environment whether in classroom, a laboratory, a computer lab, a garden, or a work place. The learning theory of connectivism was developed as a result of a belief that there is a need for learning theory which takes into account the manner in which society has changed as a result of new technologies of the digital age. Constructivism is a learning theory that came to explain how learners construct new knowledge and experiences based on their previous knowledge. Cognitivism was emerged to study how people think, process, solve problems, and apply knowledge.

Importance of the Study

Based on results of a previous study used the Hendy’s 4Cs model by the researcher, it was concluded that the proposed model had an impact on teaching science for middle school students regarding their academic achievement, life skills, and multiple intelligences. The model had a good feedback nationally through using it with students and meeting teachers who desired to use it in their teaching, and internationally through presenting the study results in an international conference that was held inside Harvard University campus in May, 2016. Because the research on testing the effect of the proposed Hendy’s 4Cs model is still limited, and there are many teachers have a desire to use it, the current study tried to identify middle school teachers’ perceptions of the effect of the model on student engagement. Moreover, this study contributes to the research field as it validates and extends the understanding of the 4Cs model in learning.

The Proposed Hendy’s 4Cs Model:

As explained above, the proposed model here is based on the four learning theories of contextualism, connectivism, constructivism, and cognitivism. So it includes four phases as follows (Figure: 1):

Contextualizing: Through this phase of the 4Cs model, learning depends on putting learners in instructional environments full of real life materials and events, as well as investing social events related to those components. Beside the general roles of teacher as a motivator and learner as an observer through the whole model, through this phase the teacher should plan effectively for learning situations, and learner should examine real materials and interact with peers to make mental images for learning materials and events.

Connecting: Once the learning tasks are being acquainted by learners through the previous phase, they can be pushed to connect what they have actually explored to other contexts technologically. So, knowledge is considered to flow through a network which contains “nodes” that can be an individual or group resources (Bell, 2009). Generally, learners are encouraged to connect learning through WWW, Emails, Wikis, Online Discussions, Social Networks, You Tube, and any other technological tools which enable them to learn and share knowledge with others. Hereby, the teacher is responsible about proposing more materials and events for learners to connect with what in the real context.

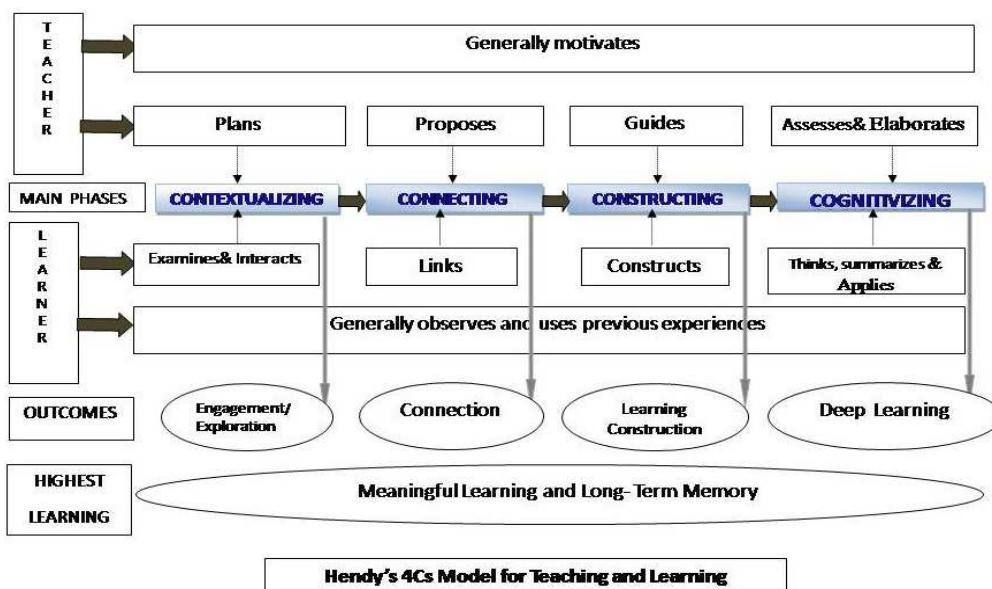


Figure 1: Hendy’s 4Cs Model for Teaching and Learning

Constructing: Through this phase of the 4Cs model, the current level of understanding, that resulted in the previous phases, is taken as a starting point for constructing new experiences. So while the teacher should guide learners to relate the current events and previous knowledge, the learner should observe, analyze, and use previous knowledge to construct new knowledge.

Cognitizing: Through the current phase, learners think about and process information more deeply. According to the cognitivism, a meaningful learning is based on an assumption that the more meaningful information provided to individuals, the easier for them to process, learn, memorize, and apply (Cruickshank & others, 2006). So, while the teacher should authentically assess learning to make elaboration, the learner should summarize, apply and make decisions regarding her/his learning. Woolfolk (2004) in (Brown & Green, 2006) explained that as learners engage in the cognitive process, they actively reflect on and make decisions as they pursue goals.

Based on above phases including roles of teacher and learner, several learning benefits can be attained by the 4Cs model:

- Practicing the model phases and procedures effectively can lead directly to development of learner engagement, exploration of main ideas, learning connection, construction of knowledge, and deep learning.
- Attaining those outcomes together can lead to the highest level of learning that would be appeared in meaningful learning.
- By experiencing real contexts, using previous knowledge, and reflecting on self-constructed knowledge through this model, information can be placed in long-term memory.
- It is expected that there is increasing in level of academic achievement, skills, attitudes, learning styles, multiple intelligences of learners.

Assumptions and Rationales of Using Hendy's 4Cs Model

The current model was emerged and proposed according to the following assumptions and rationales:

Assumptions

- Learning is still a big secret for many educators, teachers, and learners, so it maybe not completed effectively according to applications of only one learning theory.
- Since the nature of human being is complex, integrating among procedures related to some learning theories is better than depending on only one learning theory.
- New educational technology effect should be appeared within applications of learning theories; because it actually helps contextualize learning and help learners connect, construct and reflect on learning.
- Innovative learners should do something deeply after constructing knowledge; this already happens through the last phase of the model.
- We already live in an integrated and interconnected world; the world that needs integrated and multi-phase models for teaching and learning to help us acquaint life issues in an integrated way.

Rationales Behind Hendy's 4Cs Model

- The model is based on actual learning theories that have evidences towards attaining effective learning for many learners in different ages.
- The model is like an integrated mental journey that takes the learner from a contextual concrete situation to a full cognitive learning environment, and then attains the meaningful learning.
- The transition from contextual situation to knowledge application directly maybe not attained until learners connect, construct, process, and reflect on their knowledge.
- Putting learners in a real learning context at the beginning can lead them easily to connect, construct, and process information. Here, Johnston (2005) stated that educators believe that learning is affected by the context in which an idea is taught.

Student Engagement

Among many indicators of learning is student engagement; which reflects students' intellectual, behavioral, emotional, social, and cognitive learning experiences (You, 2016). Pressley and McCormick (1995) determined that engaged students contribute to their work, be enthusiastic about it, and be deeply interested in academic content. So, the concept of student engagement typically arise when educators discuss or prioritize educational strategies and teaching techniques that address the developmental, intellectual, emotional, behavioral, physical, and social factors that either enhance or undermine learning for students (The Great School Partnership, 2015).

Educationally, student engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their learning (The Great School Partnership, 2015). Henrie et al. (2015), Fredricks, et al., 2004; Reschly & Christenson (2012) described student engagement in multiple ways, ranging from the effort and persistence to their emotional involvement, use of metacognitive strategies, and motivation to learn. They also defined it as the quantity and quality of cognitive and emotional energy students exert to learn. Generally, while the concept of engagement seems straightforward, it can take fairly complex forms in practice. The following examples illustrate a few ways in which student engagement may be discussed or addressed in schools (The Great School Partnerships, 2015):

- **Intellectual Engagement:** that is students are involved and engaged intellectually in learning situations. They are intellectually active rather than passive receiving of information only from teachers and textbooks (Edwards, 2015).
- **Emotional Engagement:** that is students are emotionally engaged in learning situations. Here educators may use a wide variety of strategies to promote positive emotions in students which will facilitate the learning process, minimize negative behaviors, or keep students from dropping out.
- **Behavioral Engagement:** that is students are behaviorally engaged in their learning situations. Teachers may establish classroom routines, use consistent cues, or assign students roles that foster behaviors more conducive to learning.

- **Social Engagement:** that is teachers may use a variety of strategies to stimulate engagement through social interactions. Learning about social problems, or participating actively in social causes can improve engagement.

Generally, several studies have been conducted and explored many benefits for student engagement. For example, a study conducted by Shih (2008) found that engaged students demonstrate high levels of curiosity and interest, have a passion to learn, are motivated by challenges and difficult tasks, and exhibit high levels of persistence. Carini et al., (2006) found that engagement positively correlated with academic grades, perceived learning, and learner satisfaction. You (2016) found that college students' psychological capital had a significant positive relationship with learning empowerment, and learning empowerment fully mediated the relationship between psychological capital and engagement.

Relationship between Hendy's 4Cs Model and Student Engagement

As student engagement represents one of the most important aspects of school learning, and as teaching and learning models have been developed to attain an effective student engagement, the current 4Cs model is predicted to enhance student engagement. The model is based on real learning theories that have real principles contribute to student engagement. Through practicing the four phases of the proposed model as well as the multiple roles for both of teacher and learner, engagement is dynamically influenced by a variety of shared contextual, connecting, constructive, and cognitive activities and processes. Here, Mercer (1994) focused on the importance of interactive processes, such as common construction of knowledge as the core of effective learning (Malberge and others, 2016) that help to engage students effectively.

In addition, the multiple sequenced phases of the current 4Cs model as well as the multiple roles of both of teacher and learner provide a structure for student engagement before, during, and after the completion of instructional tasks. Students' past learning situations can contribute effectively to their engagement through coming situations of learning. All in all, according to the multiple procedures students use through this model, it can be attributed to active learning models. Anderson & Krathwohl (2001) explained that active learning requires students to be intellectually engaged with content using critical or higher levels of thinking such as analysis or synthesis. Bransford, Brown, & Cocking, 2003; Petress, 2008) explained that if students are participating in active learning, they are playing a more engaged role in the learning process and are not overly reliant on the teacher (Edwards, 2015).

Purpose and Objectives/Questions

The main purpose of this study was to investigate Egyptian middle school teachers' perceptions of the effect of Hendy's 4Cs model on students' learning engagement. The specific objectives/questions of the study were:

- What are middle school teachers' perceptions of the effect of the 4Cs model on students' intellectual engagement.
- What are middle school teachers' perceptions of the effect of the 4Cs model on students' emotional engagement.
- What are middle school teachers' perceptions of the effect of the 4Cs model on students' behavioral engagement.
- What are middle school teachers' perceptions of the effect of the 4Cs model on students' social engagement.
- What are middle school teachers' perceptions of the effect of the 4Cs model on students' cognitive engagement.

METHODOLOGY

The target population of this study was the middle school teachers in the Mid -Egypt (Beni-Suef Governorate) through the academic year of 2015/2016. A research sample was chosen randomly from among this target population. It primarily consisted of 182 teachers; the final number of respondents was $n = 167$ persons. The research data was collected through using a five-point response scale which was developed to include (28) items distributed on kinds of student engagement (intellectual, emotional, behavioral, social, and cognitive engagement). The scale was controlled regarding face validity and reliability. Concerning the reliability, a pilot study was conducted with 13 randomly selected teachers from the target population; the estimate reliability for the scale, using Cronbach's alpha equation, was 0.81. After controlling the validity and reliability of the research instrument, it was administered to the research sample and data were entered and analyzed using computerized analysis software (SPSS) to calculate and present the study results.

RESULTS

Question # 1: What are middle school teachers' perceptions of the effect of the proposed 4Cs model on student intellectual engagement? To answer this question, frequencies and percentages of the sample' responses were gotten using SPSS and listed in table 1:

Table 1: Frequencies and Percentages of the Research Sample's Responses in Respect to the Effect of the Proposed Model on Student Intellectual Engagement (n=167)

Item No.1	Items Related to the Intellectual Engagement	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	F	%
1	The model helps students to understand lesson concepts.	56	33.5	45	26.9	26	15.6	19	11.4	21	12.7
2	The model helps students to ask continuously through learning.	54	32.3	62	37.1	12	7.1	22	13.2	17	10.2
3	The model offers more instructional resources that engage students.	48	28.7	73	43.7	21	12.6	13	7.8	12	7.2
4	The model helps students to conduct integrated activities.	26	15.6	24	14.8	12	.071	57	34.1	48	28.7
5	The model helps students to perform exams perfectly.	32	19.2	42	25.1	64	38.2	19	11.8	10	6.0
6	The model helps students to link knowledge with their real life	62	37.1	54	32.3	11	5.6	22	13.2	18	10.8

It is shown in table (1) that the highest frequencies and percentages of the study sample's responses came to be between the choices of "Strongly Agree" and "Agree" for items number 1, 2, 3 and 6 while item number 4 had the highest percentage as "Disagree" and "Strongly Disagree" and item number 5 had the highest as "Uncertain".

Question #2 What are middle school teachers' perceptions of the effect of the proposed 4Cs model on student emotional engagement? To answer this question, frequencies and percentages of the study sample' responses were gotten and listed in table 2:

Table 2: Frequencies and Percentages of the Study Sample's Responses in Respect to the Effect of the Proposed Model on Student Emotional Engagement (n=167)

Item No. 1	Items Related to the Emotional Engagement	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	F	%
1	The model helps explaining the content in a way attracts students' attention	67	40.1	52	31.1	12	7.19	20	11.9	16	9.6
2	The model helps reducing student anxiety through learning.	33	19.8	62	37.1	29	17.4	22	13.2	21	12.6
3	The model helps students to appear their interests towards what they have learned.	44	26.3	46	27.5	22	13.2	30	17.9	22	13.2
4	The model helps increasing the levels of student motivation.	63	37.7	54	32.4	9	5.39	31	18.6	10	6.1
5	The model helps students to have fun through learning.	22	13.8	45	26.9	63	37.7	20	11.9	17	10.2
6	The model helps students to belong to learning situation	65	38.9	41	24.5	21	12.6	18	10.8	22	13.2

It is shown in table (2) that all items, except item number 5, had the highest frequencies and percentages as "Strongly Agree" and "Agree". But item number 5 had the highest level as "Uncertain".

Question #3: What are middle school teachers' perceptions of the effect of the proposed 4Cs model on student behavioral engagement? To answer this question, frequencies and percentages of the study sample' responses were gotten and listed in table 3:

Table 3: Frequencies and Percentages of the Study Sample's Responses in Respect to the Effect of the Proposed Model on Student Behavioral Engagement (n=167)

Item No. 1	Items Related to the Behavioral Engagement	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
		f	%	f	%	f	%	f	%	f	%
1	The model allows students to share in organizing learning environment.	28	16.8	32	19.2	30	18.1	43	25.7	34	20.4
2	The model encourages students to interact with instructional materials.	77	46.1	31	18.6	29	17.4	16	9.6	14	8.9
3	The model helps students to take notes during learning.	43	25.7	44	26.3	32	19.7	21	12.5	27	16.2
4	The model helps students to use verbal and non-verbal communication skills through learning.	56	31.14	60	35.9	20	11.9	22	13.2	9	5.4
5	The model encourages students to attend and practice in learning situations.	57	34.1	47	28.1	33	19.8	18	10.8	12	7.2

It is shown in table (3) that all items, except item number 1, had the highest frequencies and percentages as "Strongly Agree" and "Agree". But Item number 1 had the highest as "Disagree" and "Strongly Disagree".

Question #4 What are middle school teachers' perceptions of the effect of the proposed 4Cs model on student social engagement? To answer this question, frequencies and percentages of the study sample' responses were gotten and listed in table 4:

Table 4: Frequencies and Percentages of the Study Sample's Responses in Respect to the Effect of the Proposed Model on Student Social Engagement (n=167)

Item No.1	Items Related to the Social Engagement	Strongly Agree		Agree		Uncertain		Disagree		Strongly Disagree	
		f	%	f	%	f	%	f	%	f	%
1	The model encourages students to discuss in small groups.	44	26.3	48	28.7	31	18.6	32	19.2	12	7.2
2	The model encourages students to help teachers in organizing learning groups..	19	11.3	23	13.8	68	40.7	23	13.8	34	20.4
3	The model allows peer learning	66	39.5	54	32.3	11	6.6	20	12.0	16	9.6
4	The model increases the opportunity for students to seek new partners for learning	23	13.8	22	13.2	80	47.9	20	12.0	22	13.2
5	The model increases student desire to transfer what they have learned to others.	39	23.5	42	25.1	53	31.7	14	8.4	19	11.3

It is shown in table (4) that items number 1 and 3 had the highest frequencies and percentages as “Strongly Agree” and “Agree”. But Item number 2, 4, and 5 had the highest as “Uncertain”.

Question #5 What are middle school teachers' perceptions of the effect of the proposed 4Cs model on student cognitive engagement? To answer this question, frequencies and percentages of the study sample' responses were gotten and listed in table 5:

Table 5: Frequencies and Percentages of the Study Sample's Responses in Respect to the Effect of the Proposed Model on Student Cognitive Engagement (n=167)

Item No.1	Items Related to the Cognitive Engagement	Strongly agree		Agree		Uncertain		Disagree		Strongly Di agree	
		F	%	F	%	F	%	F	%	F	%
1	The model helps students to think in applying what they have learned.	55	32.9	54	32.3	32	19.2	12	7.2	14	8.4
2	The model encourages developing self-assessment	34	20.5	42	25.1	25	15.0	41	24.6	25	15.0
3	The model leads attaining meaningful learning	46	27.5	62	37.1	12	7.2	23	13.8	24	14.4
4	The model leads students to keep ideas in long-term memory	49	29.3	47	28.1	32	19.2	20	12.0	19	11.4
5	The model helps students to be involved in problem solving processes	55	32.9	46	27.5	22	13.2	21	12.6	13	7.9
6	The model helps students to reflect on accepted knowledge.	49	29.3	38	22.8	60	36.0	11	6.6	9	5.4

It is shown in table (5) that items number 1, 3, 4, and 5 had the highest frequencies and percentages as “Strongly Agree” and “Agree”, and number 2 as “Agree” while item number 6 came to have the highest frequencies and percentages as “Uncertain”.

DISCUSSIONS

Regarding the results listed and explained in tables (1-5), it is obvious that middle school teachers explained that the proposed model can be effective for intellectual engagement represented in students' understanding of lesson concepts,

asking questions continuously, offering instructional resources that engage students, and linking knowledge with the issues of real life. According to teachers' opinions also, the model can be effective for emotional engagement represented in attracting the attention of students, reducing student anxiety, developing student interests, increasing the levels of student motivation, and helping students belong to learning situation. The model can be effective also for behavioral engagement represented in students interact with instructional materials, taking notes during learning, using verbal and non-verbal communication skills through learning, and student attendance and participating in learning situations. Teachers explained that 4Cs model can be effective also for social engagement represented in encouraging students to discuss in small groups, allowing peer learning, and increasing student desire to transferee what they have learned to others. Lastly, the model can be effective for cognitive engagement represented in helping students to think in applying what they have learned, encouraging self-assessment, attaining meaningful learning, and keeping ideas in long-term memory.

This means that the relationship between the model and emotional engagement is strong. These results came to be consistent with the general important of new effective teaching and learning models towards student engagement. The results also came to be consistent with studies that supported these kinds of engagement (You, 2016), Pressley and McCormick (1995), (Henrie et al., (2015), (Fredricks, et al., 2004; Reschly& Christenson, 2012). And also with studies that recommended the instructional procedures that should be taken towards these kinds of student engagement (Edwards, 2015), (Shih (2008), (Carini et al., (2006), Mercer (1994), and (Malberge and others, 2016), and studies that explained the roles of active learning models towards student engagement (Anderson& Krathwohl (2001), (Bransford, brown, & Cocking, 2003), (Petress, 2008), and (Edwards, 2015).

CONCLUSIONS AND RECOMMENDATIONS

Based on the above results and discussion, it can be concluded that middle school teachers strongly agreed and agreed on most of items related to student engagement intellectually, emotionally, behaviorally, socially, and cognitively. Based on those results and that conclusion, the study presents the following recommendations:

- More acquainting and training for teachers in all school levels on how to use the proposed 4Cs model within more effective teaching and learning models.
- Using the proposed 4Cs model in teaching and learning different subjects in middle schools.
- Follow up studies should be conducted with other teachers in different school levels to identify the importance of the 4Cs model regarding other educational variables.

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