Enhancing the Teaching of Family and Consumer Sciences: The Role of Graphic Organisers

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In a world of constant and rapid change there are greater demands placed on learners to not only gain content knowledge, but also to develop learning skills and to adopt new strategies that will enable them to produce better and faster learning outcomes. Especially in internationally advancing nations like Kuwait this will be a major challenge of the future. This literature review examines theoretical frameworks that enhance Kuwaiti teachers' knowledge and skill to adopt culturally relevant reform practices across a number of disciplines and provide guidance in an exploration and use of newer pedagogical tools like graphic organisers. It analyses the effects of graphic organisers on higher order learning and evaluates how they can effect professional development and pedagogical change in Kuwait.

Globalisation and Internationalisation has diminished the time and space that once existed between nations. While Internationalisation has led to a tremendous increase in the importance of international trade, interaction, international relations, treaties, alliances, and interactions between sovereign nations, globalisation has moved many formerly national economies to the status of one global economy through global economic integration (Daly, 1999). Today, cultural interaction and communication is an international necessity. People who were once culturally and linguistically isolated from others are now doing business and living life together with their counterparts around the world. In this new world, not only are there ever-increasing demands for new knowledge there is also the necessity to develop new paradigms for finding, applying and sharing knowledge. At a national level, demands are also being made for substantial changes in education (Christou, 2010) which will equip the next generation of producers, business persons and civic leaders to move their countries away from resource dependent economies to ones that foster creativity and innovation in all aspects of professional, commercial and private life.

Faced with these challenges, many educational researchers have realised the need for a reformation of educational systems in ways that will more efficiently and effectively empower students to expand their existing capacities for learning, increase their abilities to acquire new competencies and enable them to become active participants and contributors to global knowledge (Spring, 2008; International Bureau of Education (IBE), 2010) and to be able to confront the challenges that the next generation will face. Before this reformation can occur, teachers need to be willing to leave their traditional approaches to teaching and implement current evidence-based strategies and teaching tools (Lawless & Pellegrino, 2007; Al-Ajmi & Reys, 2010) that will promote greater flexibility in teaching approaches, foster deeper cognitive learning (Davidowitz, Rollnick, & Fakudze, 2005; Hargreaves, 2003) and support higher order thinking, as well as develop a greater focus on problem solving and engage students with more authentic learning experiences (Caskey, 2002).

Although these changes in approaches to teaching need to be globally enacted, they also need to affect national education policies and curriculum in a way that respects the cultural context of the different countries (Reid, Gill, & Sears, 2010) so that all students will be able to apply higher order learning skills to functioning effectively in their relevant

societies as actively responsible citizens respective of their individual academic abilities or occupational ambitions. This means that the goals of education must not be restricted to academic outcomes, but should also include non academic outcomes through "values education, multicultural education, civics and democratic education, and environmental education" (Ladwig, 2010, p. 114). It is in this context that Ladwig sees an added challenge, because every change in pedagogical approach and curriculum content requires a change in educational policy, funding and resourcing. Ladwig also sees the need for change in teacher training, professional development, and curriculum assessment and evaluation to ensure that the theories behind these changes and the experiences of learners consistently produce the intended outcomes.

Although the outcomes of national changes in educational approaches and curriculum would include the development of a workforce that is fully equipped to contribute to the global community, some teachers need to be encouraged to change their pedagogy, curriculum approaches and requirements of learners. Hipkins, Reid and Bull (2010) warn that unless educators understand the need for change in educational approaches and requirements, they will fail to activate changes in curriculum pedagogy and assessment approaches, and the outcome will be less than is necessary in a globalised community. It is in this context of change that we argue that graphic organisers (GOs) help provide a new approach to teaching and learning by enabling teachers and learners to present information in a graphic form that promotes visual representations of a given topic. Through the use of visual representations learners are able to categorise elements of information, analyse the relationships between the different elements presented and critically evaluate those elements to discern the significance of all that is presented. We believe that by adopting the use of GOs into a changing education system and society there will be learning benefits philosophically, academically and professionally.

In this paper we draw upon the teaching of Family and Consumer Sciences (FCS) in Kuwait as an example of the context in which GOs can potentially provide a new approach to teaching and learning. The paper begins with a discussion of Kuwait education in the context of globalisation and internationalisation. We subsequently provide a theoretical base for the use of GOs by examining those aspects of learning theory that supports the efficacy of GOs. We next focus on the use of GOs as a tool for fostering problem solving and higher order thinking. The paper concludes with an overview of the types of GOs and how they may be used in a FCS context.

Family and Consumer Sciences in Kuwait

Globalisation has meant that Kuwait is now faced with the challenge of balancing the maintenance of its important and unique cultural heritage with the opportunities of taking an active role in the global economy. Maintaining cultural heritage and economic independence are challenged by the globalisation of economic processes whereas internationalisation raises opportunities for countries to develop strong relationships among other nations and contribute to a sustainable and peaceful future (Daly, 1999). This challenge reaches deeply into every aspect of Kuwaiti life, including its education system. Since 2006, the pull toward globalisation and internationalisation has led to the establishment of a school grading system that is similar to many western nations, having five, four and three years of schooling respectively, at primary (ages 6-10 years; grades 1-5), intermediate (ages 11-15; grades 6-9), and secondary (ages 16-18; grades 10-12) levels (Kuwait Info, 2009), a shift that led to a reduction by one year of the upper secondary stage and the extension of compulsory education from eight to nine years of schooling. The recognition of the importance of globalisation on Kuwait is also demonstrated by the fact that all schools use text books adopted from the Western curriculum and reflect Western lifestyles. Globalisation has also

made it necessary for all learners in all Kuwaiti schools to study English as a second language from the first year of primary education (Kuwait Info, 2009). It has also encouraged governmental support for non-Kuwaiti schools in the form of supervision, consultation and direction and the freedom for private schools for non-Kuwaiti children to follow the curricula of their respective home countries (Kuwait Info, 2009). These internal educational reforms have had a positive effect at a global level. Through these reforms, the Kuwaiti government opened the doors of cooperation with foreign countries, including the USA and UK which are considered to have more advanced education policies **(**IBE, 2010).

The pull by its unique cultural imperatives have been equally strong. The Kuwaiti Ministry of Education remains committed to sponsoring and financing education designed to meet the progress-needs of the country and the ever-changing internal labour market conditions (Ministry of Education, 2003). To maintain its cultural perspectives, the Kuwaiti education system continues to limit free schooling to national children.

Kuwait also recognises culturally sensitive differences in educational gender-needs and therefore provides a number of girls-only facilities and curricula activities. While this may be interpreted as being a response to global theories of feminism because it fulfils many feminist elements, it is clearly directed by cultural sensitivities and perspectives.

The FCS curriculum is one such area that is designed specifically to demonstrate Kuwait's appreciation of the unique role of women in society. In this, it fulfils feminist theory that "women and men alike have equal potential for individual development and growth" (Swarts, 1991, 3) and maintains the underlying belief that all social and educational reforms ultimately affect people's lifestyles, including their household resource-management, family education, hospitality and tourism management, food and feeding, internal design, and fashion design (Al-Anjari et al., 2007). Since 2007, all female learners in grade six through to grade nine are expected to participate in the FCS program. FCS is not offered for learners in grade 10 however, it is offered as an elective subject for grades11 and 12. The inclusion by FCS, to the principles of feminism provides opportunity for female learners to explore the distinct roles and relationships of women, to give meaning to the concept of personhood and a distinct understanding by all female learners of the "psychological, social, economic, legal and cultural obstacles confronting women" (Swarts, 1991, 3).

FCS in Kuwait operates within a balance of these global changes and national distinctions to empower learners to progress from the knowledge of facts to conceptual knowledge, a learning process that, Anderson and Krathwohl (2001) and Pickard (2007) identify as important for the development of a deeper relational understanding of concepts. Through structuring FCS lessons to have a learner-centred approach, learners are empowered through participation to move beyond factual knowledge about lifestyle disciplines to conceptual knowledge. In other words, there will be more awareness of their roles in developing their own future family lifestyles and the relevant importance of becoming active participants in the country's future society. Because they can be used to promote learner-centred engagement with the concepts, GOs have been shown to be highly effective in enriching learners' learning experience (Stäuble, 2005). The challenge for the Kuwaiti education system is therefore to adopt new teaching strategies and learning support systems that will increase the efficiency and effectiveness of the teaching and learning experience (Al-Shatti, 2005) so that learners will be empowered to engage with relevant curricular learning experiences and philosophy of FCS that reflects both the global and national cultural experience.

Theoretical Foundations for the use of Graphic Organisers

The use of graphic organisers to enhance teaching and learning in Kuwait is grounded on a number of important educational theories. In the context of globalisation, of primary

importance is the theory put forward by Vygotsky (1978), that environmental influences of learning are the actual precursors of self mastering knowledge construction and that the limitations of technological, cultural, economic and social diversity in schools and the lack of strategic instruction in schools could hinder the implementation of constructivist philosophy in learning. When Vygotsky's theory of environmental influences is considered within the context of Kuwait's participation in globalisation, graphic organisers can be seen to offer the opportunity for teachers to adopt a proven educational tool that will enhance their existing pedagogical practice, promote a new paradigm of teaching strategies that empowers learners to acknowledge global changes and the effects they have on Kuwaiti culture and introduce students to an efficient and effective way to prepare for their national and global futures.

Important also is the theory put forward by Ausubel (1968), that meaningful learning could be achieved by the incorporation of advanced organisers which were defined by Estes, Mills and Barron (1964, p. 41) as "a visual and verbal representation of the key vocabulary of a learning task in relation to more inclusive or subsuming vocabulary concepts that have previously been learned by the student".

Such visual representations were subsequently described as GOs and defined in terms of being a visual and graphic display that depicts the relationships between facts, terms, and or ideas within a learning task (Hall & Strangman, 2002). A considerable body of research subsequently positioned these devices as tools to support students' learning across many domains of knowledge but in particular reading and in the domains of mathematics and science (e.g., Hall & Strangman, 2002; Nisbit & Adescope, 2006; Novak, 2005). However, in spite of the research evidence about the effectiveness of GOs across a number of curriculum areas in the west, many teachers in the Kuwaiti educational system are still teaching through archaic and insufficient 'chalk and talk' methods where knowledge is compartmentalised and information is taught in isolated bytes.

GOs have been used in many western educational systems to promote effective change in the way learners approach the identification, collection and assimilation of knowledge and the way they engage with interconnected concepts so as to be able to recall and transfer prior knowledge to new information in a way that is both coherent and cohesive (Ausubel, 1968; Stäuble, 2005). Because of these features, GOs have often been used across a variety of curriculum areas including Maths and Science learning experiences (Harmon, Hedrick, & Wood, 2005). As a background to a study that focuses on the development of teachers' knowledge around the pedagogical use of GOs, the theoretical undergirding for the use of GOs is now discussed.

Graphic Organisers and theoretical concepts about learning

Graphic organisers have been linked to the theories of cognitive learning (Ausubel, 1968) because of their influence over behavioural changes (Ormrod, 2008; Mowrer & Klein, 2001), conceptual understandings (Ives & Hoy, 2003) and the current and future performance (Hawk, 1986) of learners. Graphic organisers have been shown to fit neatly within the theoretical frameworks of cognitive theory by their ability to encourage learners to place information into hierarchical structures according to the learners' perceptions of the importance of the data learned (Ausubel, 1968), to assimilate and accommodate new learning experiences into previous ones (Gillani, 2003) and through these cognitive structures, to develop more complex and multifaceted understandings that will, in turn, become an extended set of multi conceptual systems upon which learners can build further learning (Novak, 1998).

Also linking GOs and cognitive theory, especially the cognitive schema theory (Derry, 1996), is the idea that learners use individual and often unique schematic structures and functions which cause them to naturally follow unique learning patterns (Reynolds, Sinatra,

& Jetton, 1996). This means that unless the new information or the presentation of that information fits the individual learners' personal schema, the cognitive processes needed to assimilate and accommodate the new information will be restricted. This proposition also means that while a match between the learners' perceptions of the presentation of new information and the learners' unique psychological schemata would result in an accurate inferential reconstruction of stored information and therefore positive learning, a perceived contradiction between the two would lead to erroneous learning (Spiro, 1977). Based on this aspect of cognitive theory, Gold (2003) argued that teachers must seek to understand the learning styles of their individual learners and develop the use of teaching and learning tools that would promote a match between the presentation of concepts and subjects to be learned and the learners' psychological schemata so that the new concepts involved are not perceived as an anomaly by the learners (Bekinschtein, Cardozo, & Manes, 2008; Treagust & Duit, 2008). This of course takes into consideration the fact that perceived anomalies are normal when conceptual change happens at the beginning of learning, but that memory schemas can thwart such perceived anomalies and enable learners to retrieve information when the appropriate cues are present (Bekinschtein et al., 2008).

Graphic Organisers and conceptual learning

Graphic organisers have also been linked by researchers to the theories of conceptual learning. GOs are effective and efficient pedagogical tools, as assessed by the degree and speed with which they engaged learners in the accommodation and assimilation of important concepts across a number of fields (Robinson & Skinner, 1996) and by the compatibility of the patterns of information established by GOs with functioning processes of the brain (Marcia, 2008). DiCecco and Gleason (2002) analysed the use of GOs in terms of their effectiveness and efficiency in the field of comprehension, Chularut and DeBacker (2004) analysed their potential to promote self efficacy and self regulation in English language learning and both Braselton and Decker (1994) and Ives and Hoy (2003) evaluated their effects on vocabulary or verbal learning in mathematics. Although focused on different aspects of learning, the combined results of these studies confirmed a definite relationship between the use of GOs and effective conceptual learning. The research conducted showed that GOs help learners to establish rudimentary schema or structures and therefore to be important to the early phases of conceptual learning (Novak & Cañas, 2008). Research also showed that GOs promoted the identification of discovered information, changes in language and questions associated with the information presented and active involvement in the learning process (Novak & Cañas, 2008).

Closely associated to the link between GOs as pedagogical tools and conceptual organisation, is the evidence of researchers who have identified them as a means to enhance the cognitive load-capacity of learners while reducing the complexity of some learning tasks (Nilsson & Mayer, 2002; Stull & Mayer, 2007). Chularut and DeBacker (2004), Doolittle, Terry, and Mariano (2009) and Unsworth and Engle (2007) explained their ability to concurrently enhance cognitive load-capacity and reduce complexity as the power of working memory capacity to influence the storage and processing of knowledge and enable learners to effectively handle complex cognitive tasks.

To assess the degree of association between GOs and conceptual organisation by the potential of GOs to help learners understand statistical analysis, Carlson, Protsman, and Tomaka (2005) researched the influence of a decision making guide that applied five fundamental statistical concepts of research design on the responses of learners. The authors observed significantly different responses between learners who used the GO and those who used a textbook with a descriptive approach to the topic. Those who used only the GO

demonstrated an improved ability to select statistical methods three times more accurately than those who used only the textbook.

Relationships between cognition and mental structures in learning have also been explained through the study of the use of GOs in the presentation of information. Robinson, Odom, Hsieh, Vanderveen, and Katayama (2006) explain this relationship by showing the degree to which GOs enhance the capacity of learners to integrate knowledge of concept relations with the application of that knowledge. This is also evidenced by the degree to which GOs are able to attract the attention of learners to key concepts of information that traditional linear-only forms of note taking could not achieve. Robinson et al. (2006) found, that learners who used partial GOs secured higher scores for examinations than the learners who wrote summaries or used complete GOs. In one experiment, 114 psychology learners were given a partial organiser. The comprehension ability and note taking style of learners were measured by their performance in examinations. This study showed that partial GOs helped the learners in their note takings. In other studies (Daniel & Gregory, 1994) the effect of GOs presented to college learners as a matrix was found to influence learners to inter-connect relations among concepts better than when using only the text. That learners could identify, within a relatively short time, how concepts were related, confirmed the research conclusions reached by Robinson and Kiewra (1995) that GOs help learners recognise and use hierarchical and coordinate relations. The role of GOs in facilitating learner focusing on the relationship between key terms of information presented and their meanings, have also been explained by researchers (Bera & Robinson, 2004) whether as an advance organiser when it is introduced to the learner prior to the learning activities (Hall & Strangman, 2002; Marzano, Pickering, & Pollock, 2005), for helping to "connect new materials with prior learning" (Schunk, 2008, p. 173) or as a post organiser (Hall & Strangman, 2002). Robinson and Skinner (1996) also maintain that GOs are ideal for facilitating search processes. The authors revealed through experiments that learners who searched either GOs or outlines could find answers to fact questions as well as comparison questions faster and more accurately than those who searched the text. These findings were also affirmed by Nilsson and Mayer (2002), who examined the effects of GOs on learners' navigation of a 150-page hierarchical website of aquatic animals and found that users tested for maps had been more effective in learning compared to users who were tested for no maps. The results of the study by Nilsson and Mayer also showed that spatial skills of individuals could vary, even in the presence of GOs.

While these studies have confirmed the usefulness of GOs, it is important that teachers do not avoid an acknowledgement of the possibility that GOs could vary in effectiveness depending on the academic level, the number of graphic frames involved and the timing of the use of the organisers (Hall & Strangman, 2002; Marzano et al., 2005).

Types of Graphic Organisers

Although it could be argued that graphic organisers can take an infinite number of forms, being limited only by the imagination of their authors, some of the most common forms of GOs include the Fishbone Diagram, Know-Want-Learn Chart (K-W-L), Flow Chart, Concept Map and Venn Diagram. Each of these will be discussed in terms of their strengths and applications.

The Fishbone Diagram

The Fishbone Diagram GO, (also known as the Herringbone Organiser) so named because of its fish-like shape, is a member of the directional GO group. The Fishbone Diagram GO is commonly used to simplify the diverse cause-and-effect factors associated

with a complex topic (Lu, Tsai, & Hong, 2008) and show how those cause and effect factors are interconnected (Bellanca, 2007; Hall & Strangman, 2002).

The Fishbone Diagram would also be useful for showing a main topic and also the subdivisions related to the topic. For example the diagram is useful in examining the effects of different fabrics in fashion design (Figure 1), in a discussion about the effect of different fabrics in fashion designing and also showing as subdivisions, the various fabrics, such as silk, cotton, wool and nylon, underlying the topic. The diagram provides details about each of the subdivisions, in this case the different materials.

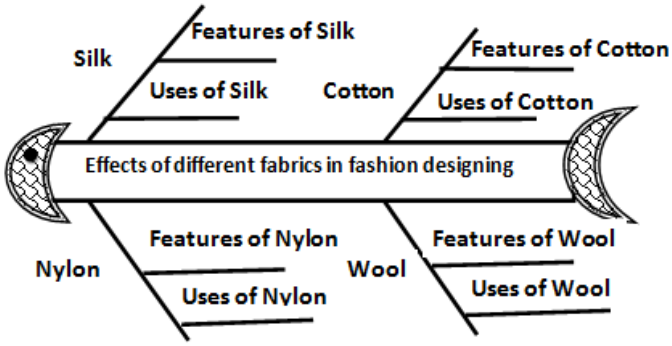

Figure 1. A Fishbone Diagram showing four fabrics and their details underlying a main topic on the effect of fabrics. Modified from "Graphic organisers" by J. Col, 2003, Enchanted learning.com.

The study by Lu et al. (2008) examined the effect of using a Fishbone Diagram in a Root Cause Analysis teaching strategy to pre-service primary Science teachers. The importance of this study is the finding that the GO could be equally useful for teachers and learners. In his study, all the eighteen pre-service primary science teachers who were trained to use the Fishbone Diagram, after training, demonstrated a better understanding of the content they were teaching and an increased ability to implement Root Cause Analysis through their effective use of the diagram as a Root Cause Analysis teaching strategy.

This same study also showed that the learners who were taught by those sampled pre-service teachers using the Fishbone Diagram, could, after the lesson, apply the tool to identify the root cause with and complete the Fishbone Diagram with the guidance of their teachers.

Know-Want-Learn Chart (K-W-L)

The Know-Want-Learn Chart (K-W-L) GOs was initially proposed as a support for active reading of expository text (Ogle, 1986). It is usually presented as a three columned table in which the user lists established knowledge about a topic in the first column, declares what the learner wants or needs to explore, in the second column and describes new information they learned during the learning session in the third column (Bellanca, 2007; Camp, 2000). The chart is sufficiently flexible to represent information (Camp, 2000), learner achievement (Czajkowski, 2000) and learner attitudes towards any subject (Williams & Burden, 1997) (Figure 2).

K What do I already know about this subject?	W What do I want to learn about this subject?	L What did I learn about this subject?

Figure 2. The K-W-L Chart which allows the learner to manage their learning. Adapted from "Graphic Organisers", by S. Wren, 2009, *Balanced Reading.com*.

For Burns (1994) and Elliott, Formhals and Wheat (2002), the effectiveness and flexibility of the K-W-L Chart is evidenced by its ability to be used to promote reading comprehension, and appropriate reading attitudes, as well as identifying different types of information, including vocabulary, content knowledge, concept knowledge and extension ideas (Burns, 1994; Elliott et al., 2002). Elliott et al. (2002) further notes the ability of K-W-L Charts to enhance expressive and receptive vocabulary, richness of words and increased use of the vocabulary by learners. Williams (2006) and Czajkowski (2000) add a further notation about the effectiveness of K-W-L Chart as a self-assessment tool for learners in the area of Science (Williams, 2006) and Social Science (Czajkowski, 2000). The effectiveness of K-W-L Chart in Science was clearly demonstrated by a study conducted by Camp (2000). After being introduced to the proposed topic, but before any instruction was given, the learners were able to represent information already known. They were also able to indicate what they wanted to learn about the given topic. Moreover, immediately after the lesson they were able to identify the new information they had learned through the activity (Camp, 2000).

The Flow Chart

The Flow Chart GO, also known as a map of cognition (Davidowitz et al., 2005), provides a graphic means to summarising procedures or sequences of instructions (Figure 3) where learners can identify each instruction, note its place in the context of the whole and understand its outcomes at certain nodes and rules at other nodes. The Flow Chart has a recognisable starting point (Bellanca, 2007; Parks & Black, 1993), shows the flow of concepts and identifies a definite outcome. The Flow Chart can also be used to graphically represent the process of making decisions, and guide learner's decision making process by indicating alternative decisional paths and their related solutions (Bellanca, 2007).

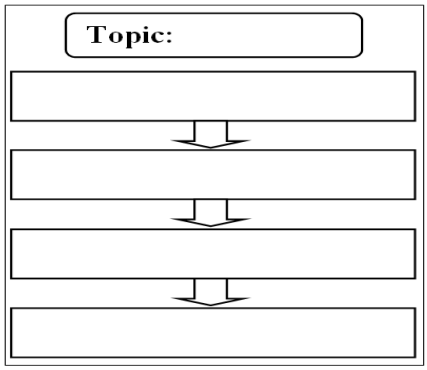

Figure 3. Flow Chart representing a series of information originating from a main topic. Adapted from "Graphic organisers", by H. M. Harcourt, 1995, Houghton Mifflin Company.

Davidowitz et al. (2005) reported the effectiveness of the Flow Chart as a tool to develop learners' skills in translating text into diagram and schematic representation of instructions. They also demonstrated how it could schematically represent written instructions for processing the text of a practical manual. The authors concluded that the Flow Chart was effective in helping learners express their deeper analytical and processing skills as well as their conceptual understanding of the manual being studied. Okoye (2008) demonstrated the effectiveness of Flow Chart in the context of science experiments by inserting an adjunct study question immediately after the Flow Chart for some learners and not for others. He noted that those learners who had access to the question after the Flow Chart significantly outperformed those learners exposed to the question before the Flow Chart and those of the control group but that there was no significant difference between those learners who were exposed to the questions before the Flow Chart and those of the control (Okoye, 2008).

The Concept Map

The Concept Map GO (Figure 4) reflects its foundations in cognitive and visual learning by enabling learners to identify concepts by their graphic or text representations and to identify relational links between them and other concepts (Vanides et al., 2005) as well as enabling learners to connect new information with previously acquired information (Ausubel, 1968; Buzan, 1983; Vanides et al., 2005). Because they can be used in a variety of learning settings (Holland, 1999; Vanides et al., 2005) Concept Maps can be considered ideal tools for meaningful learning and problem-solving (Vanides et al., 2005) that are best suited for a higher level of learning, especially those promoted in science studies (Holland, 1999), because of their ability to assist in the identification of points of information and the relationship between each area of thought and each point of information (Vanides et al., 2005). Based on a study of thematic organisers and Concept Map as schema activation strategies for gifted intermediate schools learners, Holland (1999) explained how learner interviews showed that gifted learners had benefited by the organisers sufficiently enough to be able to analyse the new information from different perspectives and could find new relations between the concepts.

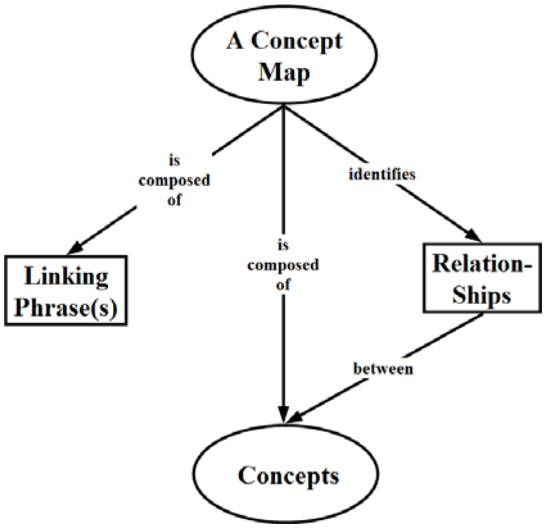

Figure 4. A Concept Map showing the relationship among different concepts. Adapted from "Problem-base learning project", Concept Map.

The Venn Diagram

The Venn Diagram GO consists of a number of intersecting circles, where each circle represent a category of information. While the non-intersecting areas of each circle represent information "items" that is unique to each concept category, the intersecting portions of each circle represent information "items" from each category that may be shared with other categories (Harris & Hodges, 1995) (Figure 5). The Venn Diagram GO is commonly used to analyse two or more concepts at the same time and provide a means to comparing and contrasting the concepts in the analysis (Baxendell, 2003; Bellanca, 2007; Linton, 2000; Marzano, Pickering, & Pollock, 2005; Traynor, 2004). They can also be used to analyse topics that contain more than one attribute (Camp, 2000; Moore, 2003) and for visually matching types of learning materials with physical and social characteristics of people (Camp, 2000). Traynor (2004) reported the effectiveness of Venn Diagram in a study on representing a range of teachers' classroom order. Three styles of classroom were studied: gentle, demanding and regulated, and Venn Diagram were used to relate their respective dispositions and practices.

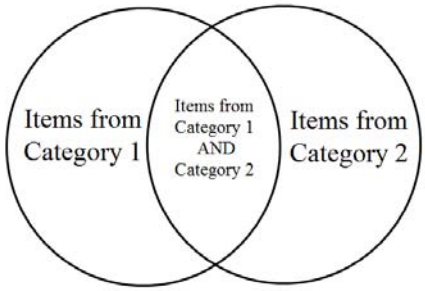

Figure 5. Venn Diagram showing the common characteristics of two different categories of information. Adapted from "Graphic organisers", *Balancedreading.com*. (2009).

Although the possible structure of GOs is limited only by the creativity of teachers, their value as effective teaching/learning tools remains dependent on the teachers' ability to create high-achieving learning environments and guide learners from their current learning environment to more complex environments including their personal environments. Bellanca (2007), and Hall and Strangman (2002) agree, that for GOs to be effective in the teaching and

learning environment, they must match advanced curriculum techniques and have the ability to engage learners in opportunities to develop knowledge, recall memory, structure abstract ideas and lead to positive learning outcomes. However, Bellanca (2007) points out that GOs, by themselves, are only partially effective, and that learners need to be taught to strategically use them. He also points out that the type of GO selected, must be appropriate to the subject area, to the approach to learning that subject and to the learning environment.

Family and Consumer Science and Graphic Organisers

While graphic organisers have been shown to be effective in building better cognition and promoting schematic retention of information (Dye, 2000) in a western teaching context, and especially in Science and Mathematics disciplines, (Harmon et al., 2005; Ives & Hoy, 2003; Ives, 2007; McLaren, et al. 2009; Moore, 2003) their effectiveness in the Kuwaiti teaching area of Family and Consumer Sciences is still unproven and therefore in need of investigation. However, the ability of Graphic organisers to help FCS learners to identify information, to understand how elements of information are interrelated and to assimilate multiple aspects of their learning environments aligns with the shift in Kuwaiti culture toward globalisation, suggests a place for GOs in the FCS subject area in Kuwait.

A starting point for this discussion is the idea, based on Bloom's taxonomy, that the learning objectives for the FCS be matched to the cognitive demands and challenges faced by FCS learners (Anderson, 1996; Ares & Gorrel, 2002; Hakkarainen, Saarelainen, & Ruokamo, 2007; Michas & Berry, 2000; Novak & Gowin, 1984) as in other subjects. This means that FCS teachers need to develop learner-centred experiences that are meaningful to learners, that is, "active, constructive, intentional, authentic and cooperative" (Jonassen, Howland, Moore, & Marra, 2003. p. 8) and are relevant to the future practical life-contexts of learners (Pickard, 2007; Reynolds, 1998) as well as appropriate for current classroom teaching practices (Pickard, 2007). Bloom's (1976) inclusion in his taxonomy of cognitive, psychomotor and affective domains of the brain producing knowledge, skills, and attitudes, supports Novak's notion of cognitive construction and reconstruction of integrated knowledge and is therefore, an appropriate model around which to form the learning design of FCS and the use of GOs as teaching tools. Based on Bloom's taxonomy, it could be expected that carefully chosen GOs would enable teachers to identify key information about FCS topics, even if their own cognitive capacity is limited, and to enable learners to become actively motivated participants in their own learning (Hakkarainen et al., 2007) as they work through carefully created activities shaped by the GOs to discover both the information and the significance of that information to their own life contexts.

Use of Grade Six FCS classes as an example of testing and developing GO tool will be ideal as the Kuwaiti Grade Six curriculum area for students aged 11 incorporates a variety of not-so-complex subjects and topics that would be suitable for developing, testing and evaluating GOs. For example learners who investigate local environmental conditions could be supported by the use of the K-W-L Chart. Learners' "K" responses could be used to assess the scope and level of established knowledge about environmental conditions in Kuwait. Their "W" responses could then be used to analyse the learners' motivations for knowing about local environmental protection strategies. When used in this way, the K-W-L Chart may provide a relevant and meaningful resource for teachers to understand their students and to better understand and manage their own environmental awareness and in doing so translate their cognitive and visual theories into real life.

Still in the environmental area of studies is the Venn diagram to identify unique and shared perspectives of environmental issues perceived by western and Kuwaiti scholars and strategists. The Venn diagram would help learners identify the differences and similarities between public and private sector perspectives on environmental management, which would,

in turn, enable them to arrive at their own position. Recognising the complexity of the environmental debate and the number of contradictory contributions to the debate, the Venn diagram could also be useful in reducing the cognitive load for learners in this activity by enabling them to distinguish the different and common opinions in the debate.

In the curriculum area of "Fashion," the Fishbone Diagram could be used to support learners' knowledge about local and international fashion by providing a means through which they could identify relevant causal issues, including international marketing pressures placed upon Kuwaiti designers to style their fashion on western fashion trends. This approach to fashion awareness would empower the learners to identify the relationships between a variety of causes and effects as well as the degree of cultural business relevancy of each fashion trend (Lu et al., 2008) and would enable them to research the subject in a safe environment, that is, one that encourages rather than limits or condemns individual approaches to learning, personal investigation and interpretation, so that learners arrive at their own understanding and viewpoints about the issues being raised.

Concept Maps could also be used to interlink the primary factors, contemporary dress design, with other factors including colour, design and accessories (Buzan, 1983). Through using the Concept Map, learners will be able to analyse the dress fashion trends from different perspectives and find new relationships between the concepts presented (Holland, 1999).

A key assumption in the use of Flow Chart as tools in the study of topics involving any ordered series of instructions is that learners could use them to present information about unwanted outcomes if something goes wrong at a particulate stage of a process. For example, baking a layer cake with many possible outcomes at certain nodes and rules at other nodes would enable learners to illustrate this point. Overall, Flow Charts would be useful in this learning activity because they possess the potential that help learners organise "what to do" and remember "how to do" it. They would be especially useful to present complex recipes, enabling learners to translate the instructions and process descriptions into easy to follow pictures or symbols. Overall, the use of GOs in the Kuwaiti FCS grade six curriculum would be useful to deliver a variety of topics (Table 1)

The inclusion of GOs in grade six curriculum is also a positive response to Bruner's (1968) argument that the capacity to handle multiple sequences of a complex whole, is dependent on how well the external learning environment is ordered. The inclusion in the selected GOs of both language and symbols representing the local culture would also promote the use of learner logic, reasoning and development as well as present an appropriate balance of cultural perspectives and dialogue that would help in the mental growth of learners (Bruner, 1968).

Table 1
Types of GOs ideal for various FCS topics in Grade six curriculum

Topic	Tasks	GO
Types of ornaments	• Identify and categorise the different shapes of ornaments. • Compare the ornaments. • Describe and predict properties of geometric shapes. • Describe and predict properties of abstract shapes. • Relate abstract and geometric forms. Represent the relationships. • Describe and predict the properties of line and point forms. • Relate line and point forms with geometric and abstract forms. • Describe and predict properties of floral shapes. • Compare floral forms with abstract forms, represent the relationship. • Describe and predict properties of natural shapes. • Compare floral forms with abstract forms, represent the relationship. • Compare natural forms with line and point forms, represent the relationship. • Students share responses, summarise the main ideas.	Venn Diagram
What are human resources?	• Identifying from the text the types of human resources. • Define and summarise the term "human resources" as the main idea. • Categorise human resources. • Identify "Energy and effort", "Skills and abilities", "Attitudes and hobbies" and "Knowledge and science" as sub ideas. • Summarise the topic.	Fishbone Diagram
Protecting the Environment from pollution and over consumption	• Remember, understand, analyse, evaluate and create the fundamentals of natural resources. • Identifying the issue of garbage and pollution. • Link the topic to a water pollution activity reported in the newspaper. • Identify the main idea of improving our dealing with the land and water resources. • Understand that unwise exploitation of natural resources lead to environmental pollution and damage to flora and fauna. • Name environmental changes leading to water pollution. • Describe the types of water pollutants. • Identify and discuss the damages caused by water pollution.	Flow Chart
Colour Wheel	• Understand the meaning of colour wheel. • Examine primary, secondary and tertiary colours as well as water primary pastel colours. • Read the instructions on making secondary and tertiary colours. • Understand that primary colours are yellow, red and blue; these cannot be configured from other colours; they are the basis of secondary and tertiary colours. • Understand that colour wheel is necessary for selection and creation of fashion materials. • Represent and discuss the concepts of colour wheel. • Represent and discuss the concepts of primary colours. • Represent and discuss the concepts of secondary colours. • Represent and discuss the concepts of tertiary colours.	Concept Map
Fashion accessories	• Understanding of the nature and types of fashion accessories. • Read the topic on fashion accessories. • Examine some fashion accessories, note down their differences in colour, shape and texture. • Describe the differences among these accessories and the reason for these differences. • Discuss what students want to learn about Fashion accessories.	K-W-L Chart

Conclusion

Kuwait has not been missed by globalisation. It also is faced with balancing global progress and demands against its own unique cultural heritage in every aspect of life, including education, which is now similarly aligned with the west in its grading system, its curriculum and its text resources. Kuwait has also met the linguistic demands placed on it by globalisation by making it necessary for all learners in all Kuwaiti schools to study English as a second language. However, faced with the need to maintain its unique cultural heritage, Kuwait remains committed to culturally sensitive differences in educational gender-needs by providing a number of girls-only facilities and curricula activities, one of which is the FCS curriculum area.

Kuwaiti teachers and learners are also not immune to the constant and rapid changes being experienced by people around the world. In fact, because of global changes, they are exposed to almost exhausting demands for greater content knowledge, more complex learning skills and more effective strategies that will enable them to produce better and faster learning outcomes. In the exploration of pedagogical tools including GOs, Kuwaiti teachers are challenged to enhance their own knowledge base and to adopt culturally relevant reform practices across a number of disciplines whilst at the same time remain loyal to accepted educational theory. However, Kuwaiti teachers and students are also faced with the challenge to assimilate many of these global expectations whilst, at the same time, holding on to their cultural distinctive. This is nowhere more significant than in the Kuwaiti subject area of FCS.

FCS though a relatively not-so-complex subject area it covers wide knowledge about both global and national issues related to environment, business, fashion, interior design, hospitality, tourism and ethics. Its philosophical approach is based on special recognition and respect for women and family and this is reflected in its design to prepare girls for the multiple facets of everyday life in Kuwait in terms of knowledge, skills and worldview. To meet these design goals FCS learners are encouraged to integrate physical, psychosocial and cognitive aspects of learning and to become independent in their thinking and in their motivation to become life-long learners. In this context GOs are believed to hold an important strategic key in terms of being effective and efficient teaching tools.

Graphic organisers have been shown to be effective in bringing about conceptual change, facilitated through metacognitive skills through Concept Mapping, flow charting, distinguishing comparative and similar information on a single topic and through being able to identify what is already known, what is needed to be known and what knew information has been learned. Overall GOs have been proven to enhance critical thinking and problem-solving in a range of subject areas including Math, Science and, in the context of Kuwait, FCS. Because the majority of Kuwait's FCS topics involve producing diverse solutions to real life situations, the GO would be an ideal tool to encourage learners to brainstorm ideas, to analyse those ideas, to differentiate the concept arising from the ideas and to think critically about those concepts.

One observation that must be noted in regard to the introduction and use of GOs in the educational system of Kuwait is that the traditional teaching methodology there has very limited experience in learner centred strategies and that this would mean that teachers and learners would have little experience in the integration of teaching /learning tools that would encourage such an approach. It could be argued therefore that some investigation needs to be conducted into the potential of professional development programs for Kuwaiti teachers that would promote a shift from traditional Kuwaiti teaching methods to learner-centred methods, a shift that could include the use of GOs in the learning experience and the establishment of a professional support system including educational policies that would ensure continued effective and efficient reforms in Kuwait.

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Citation

Alshatti, S. A., Watters, J. J., & Kidman, G. (2010). Enhancing the teaching of family and consumer sciences: The role of graphic organisers. *Journal of Family and Consumer Sciences Education, 28* (2), 14-35. Available at http://www.natefacs.org/JFCSE/v28no2/v28no2Alshatti.pdf