



New Challenges Facing Curricula in KSA in Light of Vision 2030: Major Objectives and Curriculum Design

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The Kingdom of Saudi Arabia is heading towards a comprehensive revolution socially, economically, politically, medically and scientifically. The features of the change are very well embodied mainly in the vision 2030 and in the National Transformation Program (NTP). The features and objectives are distributed among the different ministries and institutions in the Kingdom. The current study investigated the main objectives related to the Ministry of Education. The research tools are: a survey of the vision 2030 and the NTP documents to decide on the main objectives related to education, an interview with curriculum design specialists to discuss the credibility and applicability of the objectives and a unit designed by the researcher in which he includes whatever possible of these objectives. The findings of the study revealed that the objectives (related to students' outcomes, curriculum design and teacher training) are very well embodied in vision 2030 and NTP. The interviews with educators showed that these objectives are achievable if implemented by very well trained teachers and highly motivated students. The study recommended teacher training that matches the new challenges in terms of teaching strategies, updating curricula, and reconsidering the main goals of the teaching learning process.

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1. INTRODUCTION

The three main aspects of vision 2030 in KSA are curriculum development, higher education advancements and building skills needed for the job market. *“Without an educated and skilled workforce, it will be a tremendous challenge for Vision 2030 to meet its target goals* [1]. This quotation summarizes the rationale behind the national transformation program. This includes among its strategic objectives improving the learning environment to stimulate creativity and innovation, curricula and teaching methods, students’ values and core skills. NTP also aims at educating students to address national development requirements and labor market demands. Prince Mohammad Bin Salman emphasized the continuous investment in education and training to develop early childhood education and to refine the national curriculum [2]. These areas include closing the gap between the outputs of higher education and the requirements of the job market. They also include building a centralized student database monitoring students’ progress from early childhood to K-12 and beyond into higher education [3]. The interest in revolutionizing education started from the top decision making. The former Minister of Education of KSA Ahmed Al-Issa emphasized the importance of reconsidering the current status of education to cope with new challenges. The country’s National Transformation Program was prepared to repair the outdated education system that is old-fashioned and unable to prepare the new generation for new challenges. The minister gave the people in charge a last chance to come up with a viable plan to improve education. *“Our current education system is a product of the past, not an enabler of the future”* [4]. The Kingdom is willing to build a country with collective national efforts with contribution from all citizens. In turn, all citizens have roles to fulfill, regardless if they are working in public, private or non-profit sectors. All citizens will work continuously to assist in the achievement of these ambitions and be collectively responsible as part of the Kingdom, society and families. The involvement of families in their kids’ education is highlighted in the vision 2030 [5]. Information and technology are very important for vision 2030 to diversify the economy, and to change the oil-reliant nature to a manufacturing economy [6]. The importance of a curriculum that links education to industry to meet the demands of Kenya vision 2030 is

pointed out [7]. They used some Asian countries like Japan and Malaysia as good examples for high income industrial countries.

The decision-makers in KSA believe that the success of vision 2030 relies on reforms in the education system that is expected to generate a better platform for employment of young Saudis. This study looks into how the main goals cascade down [8] through the NTP, their applicability and the challenges that may face them.

Questions of the study

1. What are the objectives of the teaching/ learning process as derived from Vision 2030 and NTP?
2. What are the challenges that face implementing these objectives?
3. How can authors and curriculum designers integrate these objectives into curricula?

2. REVIEW OF LITERATURE

Since the launching of vision 2030, a new spirit of change has spread in the kingdom of Saudi Arabia. Schools, universities, and academic institutions started to work out plans on how to realize the Crown Prince's ambitions. The Prince's ambitions were emphasized through discussing the challenges that face higher education including research productivity, accreditation and improving quality [9]. Improving the awareness toward tourist education among students at schools was also investigated [10]. The findings revealed lack of tourism education as well as the weak communication between curriculum experts and teachers in the field. The characteristics of effective English language teachers in Saudi Arabia in the light of Saudi Arabia’s 2030 vision from the pre-service teachers' points of view were explored [11]. The findings indicate that four main categories concerned with the technical knowledge, pedagogical skills, interpersonal skills and personal qualities were considered highly effective and important characteristics of English language teachers that meet the Saudi Arabia 2030 vision in establishing positive outcomes in the field of education from pre- service teachers’ perspective. The evaluation of changes required in the curriculum for Saudi Universities to meet the demands of 2030 vision should have priority [12]. To know the gaps in the current curricula

and the obstacles that stand against achieving the vision, a systematic review has been implemented. Teachers are invited to introduce new strategies to teach English language that is necessary for successful communication (Al-Sulami, 2016; Al-Zahrany et al., 2017, cited in [12]. The objectives and aims of vision 2030 should be given enough attention and more weight in school curricula [12]. The researcher investigated the impact of educational policy development on practice within Tatweer Schools in KSA, in terms of innovation and autonomy level [13]. This study was important in terms of timing as the Tatweer Programme is a new policy innovation. This programme is expected to help decision-makers facilitate actual practice in real-life contexts within the schools. It is a major shift of Saudi educational policy moving from centralization to decentralization, from focusing on the individual to team learning; from being isolated schools to open schools having a partnership with society. Unfortunately, students are not responding to these developments. The possibility of adapting the suggestions by Hargreaves and Shirley (2009) in their book "*The Fourth Way*" was discussed [14]." This paper discusses three main points related to educational change. First, it reviews the most important advantages and disadvantages that characterize the three periods of change, as presented by Hargreaves and Shirley (2009). Second, it extracts the main principles proposed by Hargreaves and Shirley (2009) as the fourth way (the principles of how education should be changed in the future) and discusses whether or not officials in Saudi Arabia will be able to apply it. Third, it reviews the movement of change and reform that has taken place in the Ministry of Education of Saudi Arabia (MESA) in order to reform education. Hargreaves and Shirely (2009) cited in [14] mentioned Finland and Singapore as successful examples of change and referred their success to not having a system of standardized testing. Their proposal named "the fourth way" contains six pillars

(Inspiring vision, strong public engagement, investment that leads to achievement, educational responsibility, students increased voice and learning for life), three principles of professionalism (Qualified teachers, strong associations, active learning communities), four catalysts (sustainable leadership, integrating network, responsibility then accountability, differentiation and diversity). This proposal is considered a breakthrough for all those seeking change.

3. METHODS

The research methodology of this study comprises three main procedures. In order to find out the main objectives of the teaching learning process that match with KSA vision 2030, the best documents to consult are Vision 2030 proposed by the crown Prince Mohammad Bin Salman and The National Transformation Program. These two documents although patronized and supervised by the prince, they were written and suggested by experts in education. The objectives derived from the two documents were filtered and refined into a final list related to three categories: Objectives related to the learning outcomes, objectives related to curriculum and the third category of objectives is related to the teacher. The three categories of objectives were sent to five experts in curriculum and teaching for validation in terms of the credibility and applicability; in addition to the possibility of incorporating them into the curricula in all stages (Elementary, intermediate and high school.) The common answers of the experts are filtered and tabulated for later analysis. The objectives related to the curriculum and learning outcomes are reflected in a suggested unit that satisfies the ambitions and expectations of vision 2030. The activities included in this unit are referred to the objective(s) they reflect.

4. RESULTS

The results of exploring vision 2030 and the National Transformation Program in relation to education are filtered, categorized and tabulated in three groups: objectives related to learning outcomes, objectives related to the curriculum and objectives related to the instructor.

Table 1 shows the three categories of objectives related to the outcomes, the curriculum and the instructor. As illustrated in the two documents, education and the teaching learning process almost dominate the vision and the NTP. The outcomes, the prospects of the curriculum, and the new role of the teacher reflect the expectations and the ambitions of the decision-makers in the kingdom. They predict that a new generation that is open minded, globalized and flexible will substitute the close-minded, spoon-fed and old-fashioned generation.

The objectives taken from the vision 2030 and NTP and related to students' outcomes, the curricula and the instructors were given to a group of experts. The experts validated these objectives in terms applicability, credibility and

viability. They also expressed their opinion whether the objectives are too ambitious to achieve or possible to achieve with determination and hard work.

transform the country and classify it among the developed countries if achieved properly. The interview with the experts showed that the objectives can only be achieved through training teachers and reconsidering the teaching learning strategies. Curricula need to be revolutionized in order to cope with the change.

Table 2 shows that the objectives derived from vision 2030 and NTP are golden chances to

Table 1. Shows the three categories of objectives taken from Vision 2030 and NTP Program

	Objectives related to the outcomes	Objectives related to the curriculum	Objectives related to the instructor
	According to vision 2030, a student is expected to	According to vision 2030, the curricula are expected to	According to vision 2030, teachers are expected to
1	consider the job market while planning to his study and future career	focus on the students fundamental characters and establish empowering health and social care systems	engage the society in students' education
2	keep the National Identity deep in his thought	Develop outcomes of the education system in line with market needs	receive training on how to communicate with the students and the society
3	assume social responsibility towards people especially pilgrims	precisely determine the skills and knowledge required by each socio-economic sector	cope with the most up to date technology in education
4	develop good competence in English language as well as other disciplines	expand vocational training in order to drive forward economic development	study the main goals and the minor objectives of 2030
5	interact with the most up to date incidents around the world	prepare a modern curriculum focused on rigorous standards in literacy, numeracy, skills and character development	update himself with the latest methods of teaching and learning
6	get the soft skills necessary for joining the labor market	track progress and publish a sophisticated range of education outcomes, showing year-on-year improvements	provide the suitable learning environment to stimulate creativity and innovation
7	develop basic research skills	work towards developing the job specifications of every education field.	enrich curricula with unique teaching methods
8	assume the right skills for the future	invest in strategic partnerships with apprenticeship providers, new skills councils from industry, and large private companies.	improve students' values and core skills
9	become independent and active member of his society	build a centralized student database tracking students from early childhood through to K-12 and beyond into tertiary education (higher and vocational) in order to improve education planning, monitoring, evaluation, and outcomes.	educate students to address national development requirements and labor market demands
10	keep lifelong obligations to his family and the society	encourage volunteering and team work	engage the private sector in the education sector.

	Objectives related to the outcomes	Objectives related to the curriculum	Objectives related to the instructor
	According to vision 2030, a student is expected to	According to vision 2030, the curricula are expected to	According to vision 2030, teachers are expected to
11	be committed and disciplined, acquire new experience and pursue his ambitions	focus on social responsibilities	deal with the multiple intelligences while teaching your students
12		improve productivity of employees	get involved in a national strategy to upgrade the teaching profession by raising the professional level of teachers, improving the profession's ecosystem and raising the quality of services provided to teachers
13		instill Good communication skills	participate in developing KPIs at the Ministry level
14		conserve & promote the Kingdom's Islamic, Arab and National Heritage	get involved in a Transformation Office and an office of strategy management at Ministry level to implement the relevant sections of the NTP
15		provide the learning experiences to achieve the above goals	shift the digital education to support teacher and student progress
16			help in life-long Learning.

Table 2. The curriculum experts' answers to the questions about the challenges that face achieving the objectives

No #	Questions	Answers
1	Are the objectives very ambitious?	They are very ambitious. If achieved, they will transform the kingdom to a more globalized country.
2	Are they achievable? Why, Why not?	Generally, there are many obstacles. However, I believe the ones related to English language teaching are the most difficult to overcome. Are you talking about university or education in general? If it is in general, I don't think it would be achieved easily. The problem is not with the objectives themselves, but with the delivery process. Who is going to ensure that teachers at the various grade levels are well qualified to be part of the process?
3	What challenges may stand against achieving them?	As said above, the problem is: Do we have qualified teachers who would help students achieve those objectives? Also, there is a need to change peoples'/parents' attitudes towards the way they treat their kids and deal with them as human beings and as students.
4	What do you suggest to overcome these challenges?	There is a need to prepare competent teachers who believe in those objectives and who are able to deliver them. There is a need for a paradigm

No #	Questions	Answers
5	If achieved, how can these objectives help in fulfilling vision 2030?	shift. Drastic measures need to be taken to shake the whole system upside down. Vision 2030 is about having active competent citizens who are open to change and ready to be part of the whole process of turning Saudi Arabia into a “first World” country. The above objectives are good, as I said above, as long as they are achievable. They are intended to change the kingdom into a more globalized country and consequently the new generation is accredited as ready to lead the change and transform the country.

5. DISCUSSION AND ANALYSIS

The answer to the first question reveals motivating results as the ambitions related to education in vision 2030 are promising and if achieved will certainly transform the Kingdom to an advanced place among the leading countries in the world. These objectives are tabulated under three categories: learning outcomes, curriculum change and teacher training and new strategies. The objectives related to learning outcomes are expected to revolutionize the teaching learning process. The graduates of the new process are expected to be globalized and universally accredited in terms of hard and soft skills. They are going to be more responsible, more independent self -learners, open-minded and more interactive participants. With regard to the second question, the interviewees expressed their shy optimism concerning the achievability of the objectives. They were worried about the degree of motivation, readiness and seriousness of students in addition to the attitude and the aptitude of the teachers who are going to implement the new curricula and the ambitious objectives. Al-Nahdy expressed his worries about selecting wrong models in KSA and mentioned reasons that may hinder the prospected change [14]. Al-Yamy showed his disappointment as a result of all Tatweer tries in the Kingdom [13]. *"Despite these significant developments, however, the level of students' achievement has not been changed"*, P.1515. Alnahdi [15] and Altayyar (2003) cited in [14] referred the lack of success in the educational system in Saudi Arabia to the lack of teachers' responsibility, desire and enthusiasm for teaching which reflect negatively on their students. It is also the consequence of the lack of lesson planning skills and classroom management. In Saudi Arabia teachers no longer have the social status they used to have before. People who are not interested get into teaching because it gives

them a life time [14]. Question three is partly similar to question one in terms of the ability to integrate the learning outcomes and the curricular aspects of change. The unit that appears in (Appendix 1) is an example of introducing a curriculum that reflects the ambitions and the prospects of vision 2030. The biggest challenge is the implementation which is related to the teachers and the students with all the reservations that are mentioned earlier. The government of Saudi Arabia in general and the Ministry of Education in particular are not saving an effort to revolutionize education. They have already developed the curricula to cope with the new challenges, the classrooms and laps at schools and other academic institutions are very well equipped with the most up-to-date technology. Similarly, students generally belong to well to do families that support them with all the requirements needed for projects and initiatives. There is no clear reason why the output of the teaching/learning process is still below expectations.

6. CONCLUSION

The decision makers in KSA have strong determination that education has to be revolutionized. Education influences all the aspects of life in a country; engineers, doctors, lawyers, teachers, dentists, chemists ...are all products of education. Vision 2030 is fixed as a deadline for KSA to move to a new era of an open country, involving innovative ideas and creative people all over the world. The great projects that were initiated in relatively a short time were clear indication that the Kingdom is heading towards a new classification of KSA. This research is meant to shed light on the aspects of innovation with regard to education. The researcher was limited by time and job limitations to use other data collection tools like interviews, document reviews or surveys. More

studies are expected to tackle this very important area especially curriculum development and teaching strategies; in addition to motivating students to be a rich environment for innovation and improvement.

7. RECOMMENDATIONS

The study recommends that all the drawbacks, the challenges, the worries especially those related to the students and the teachers in KSA should be changed into opportunities and incentives that will accelerate achieving the vision 2030. The learning outcomes should be integrated into the curricula of kids at a very early age. Teachers, parents, and educators should be keen on spreading the spirit of vision 2030 in every learning experience. Curricula should be designed in a way that incorporates the new technology and should not only compete with but also overcome the motivating social network sites and TV channels. The distant learning model that proved to be a viable alternative should be given more chances of success and the pitfalls should be avoided. Teachers should be trained to exploit the students' addiction to using technology especially smart phones. Old fashioned, traditional, closed minded teachers have no place in the new concept of the modern school. The three heads of the educational pyramid—the student, the teacher and the curriculum—should work in complete harmony so that good results should be achieved.

DISCLAIMER

The consent of the curriculum experts who gave their opinions in the objectives derived from vision 2030 and NTP was sought. There is absolutely no conflict of interest between the authors and the Saudi Ministry of Education and the results of this research are meant to help anyone interested in curriculum design and for the advancement of knowledge. The research was not funded by any government or non-governmental agencies rather it was funded by personal effort of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDICES

Appendix 1 shows a model unit on how curricula should be designed to achieve the new challenges and the objectives each activity is supposed to achieve.

Ethics in Engineering

Lead in



Activity 1. Picture discussion

1. What can you see in the pictures above?
2. What is in common in the four pictures?
3. Why do you think this happened?
4. Whom do you blame for these disasters?
5. How can we avoid such disasters?

Assume social responsibility towards people

Keep the National Identity deep in his thought.

Activity 2. In groups of three watch a video about space challenger disaster and give a summary of what happened

Develop language competence/ summarization

Activity 3. Fill in the spaces with the correct derivation where possible

Verb	Noun	Adjective
	Destruction	
Weaken		
Integrate		Acceptable
	Inspection	
		Necessary
	Compression	
Require		
emanate		

Develop good competence in English language

Activity 4. Answer these two questions about the reading text

1. What are the two space accidents mentioned in the text? Which of them happened first?
2. Answer these questions about the two accidents

	Challenger	Columbia
Causes:		
Results:		

Develop good competence in English language

Activity 5. In groups use the dictionary (es) on your mobile phones to find out the meanings of the words in bold type

Use technology in the teaching learning process

READING COMPREHENSION

THE IMPORTANCE OF ENGINEERING ETHICS

On January 28, 1986, *Challenger* exploded and broke apart some 73 seconds after liftoff, taking the lives of its seven crew members. The explosion was traced to the O-rings in the shuttle's right solid-propellant booster, which failed to form the necessary seal and allowed high-temperature gases to escape and burn through the external fuel tank. The destruction of *Columbia*, on February 1, 2003, during reentry into the earth's atmosphere, was the result of a piece of insulating foam that had separated from the left bipod ramp of the external tank and struck *Columbia*' s wing during takeoff, causing damage to its thermal protection system. Upon reentry, superheated air penetrated the damaged wing, weakening the structure and causing it to disintegrate.

What is most striking about the two shuttle disasters from an ethics standpoint is the extent to which the technical issues leading to the failures had been recognized and understood by the engineers involved in the missions. In the case of *Challenger*, engineers had known of a design flaw in a tang and clevis joint in the solid-propellant boosters from the earliest days of the program. The design featured two O-rings that were intended to seal the joint by compression. However, ignition caused

the tang and clevis to move away from each other, lessening rather than increasing pressure on the O-rings. The primary O-ring would shift forward into the gap between the tang and clevis, forming a seal, but hot gas would escape during the time of the shift, causing damage to the O-rings. However, neither the manufacturers nor NASA made an attempt to correct the design flaw, choosing to regard the seal created after the shift as acceptable.

In 1985 Roger Boisjoly-a mechanical engineer employed by Morton Thiokol, the company responsible for producing the solid-propellant boosters-observed significant O-ring damage in a nozzle joint during a post flight inspection of another shuttle. He found that low temperatures had lengthened the time required for the O-ring to move from its groove, thereby allowing more hot gas to escape. He sent a memorandum to his senior manager noting that if a similar event occurred in a field joint, "the result would be a catastrophe of the highest order-loss of human life."

Temperatures on the night before the *Challenger* liftoff were predicted to be well below the range of current data results, and Boisjoly and other engineers recommended that the launch be postponed. But NASA was operating under a tight window of opportunity for the launch, and its rocket booster project manager contended that the data were inconclusive. Morton Thiokol's senior executives met in closed session to discuss the matter and, over the objections of the company's engineers, voted to recommend that the launch proceed.

With regard to *Columbia*, NASA's original design specifications for the space shuttles considered damage from foam loss to be a particular safety threat and required that "no debris shall emanate from the critical zone of the tank on the launch pad or during ascent." In practice, however, damage from space debris occurred on every shuttle flight, and nearly every ascent involved some shedding of insulating foam. Foam shedding from the left bipod ramp had been detected on at least six prior missions. Yet because of the success of those missions NASA came to consider the incidents as mere "in-flight anomalies," not as something that could jeopardize the crew.

Reading Comprehension.

Activity One: Read the text above and answer the questions that follow

1. What is there in common between the reasons behind the two shuttle disasters?
2. What is most striking about the two shuttle disasters?
3. What does "operating under a tight window of opportunity mean"?
4. If you were Boisjoly-the engineer in charge of the liftoff of Challenger, what would you do?
5. How was debris a threat for space shuttles?
6. How was Challenger explosion a big loss for America? Have you heard about similar tragedies in KSA?
7. How could Morton Thiokol avoid such tragic incident in the future?

Analyze, compare, contrast, interpret, keep the national identity, hypothesize, predict and develop language competence.

Activity two: Make sure that the meanings you get for the words in bold match their meanings in the text

Develop good competence in English language.

Interact with the incidents around the world

Activity Tree: Fill in the spaces with words in bold in the reading text above:

1. Builders usually usematerial in roofs to minimize sound.
2. If students continue to absent themselves for any reason, the result will be a
3. The data about the project was It needs further investigation.
4. means to put at risk or pose a threat.
5. The flowers in the garden good smell throughout the house.

Develop good competence in English language.

Listening:

Task1: Watch the video again and answer the questions below:

1. Describe the weather before the liftoff of challenger.
2. How long did the spaceship fly before the accident happened?
3. How did the mission control respond to the accident?
4. How did NASA respond to the accident?
5. Which news agency announced the news of the crash?

Develop good competence in English language as well as other disciplines

Task 2: Listen again and fill in the spaces with missing words.

All thebetween the shuttle and mission controleverything is going fine. It happened just over one minute of the for mission control The head of the space program had no, but of the tragedy. NASA has appointed aof top engineers to investigate the

Develop good competence in English language.

Task 3: How would you feel if this tragedy- God forbid- happened in KSA?
Develop a sense of nationalism in students.

Speaking

Task 1

In groups, discuss the economic, environmental and scientific consequences of space challenger accident.

interact with the most up -to- date incidents around the world.

Task 2

Is it possible that the Kingdom of Saudi Arabia launch a space ship to explore space? If not, what might be the challenges? How can you contribute to this?

Acquire the soft skills necessary for joining the labor market

Develop good competence in English language

Task 3

You are supposed to interview the engineers in charge of launching challenger. What kind of questions do you ask them?

Developing the soft skills necessary for the job market
Writing

Task 1

Read the National Transformation Program, Delivery Plan 2018-2020 and write an essay about the Ministry of Education plans to transform Education towards creativity and invention.

Develop research skills

Task 2

Do you consider challenger crash a national tragedy? Why/ Why not?

Develop critical thinking skills

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