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Designing Curriculum to Achieve Sustainable Development Goal through 21st Century Skills

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Abstract: *Sustainable Development Goal four envisages inclusive and equitable quality education and promotes lifelong learning for all. Curriculum plays a very important role in enabling quality learning that ensures holistic development of learners. It's important for the learner to be skilled as well as proactive ambassadors of culture and values for the future generations. Designing curriculum including the four key aspects of SDG4 that is inclusive and equitable, characterized by quality learning, promoting lifelong learning and relevant to holistic development interwoven with developing skills of knowledge acquisition, cognitive complexity, Interpersonal & Intrapersonal competence, Humanitarianism and civic engagement, Practical competence could generate into a challenging curriculum to transact. This paper attempts to create a road map to this futuristic curriculum.*

Key words*: sustainable development, designing curriculum, holistic, knowledge acquisition, cognitive complexity, Interpersonal & Intrapersonal competence, Humanitarianism.*

1. INTRODUCTION:

Curriculum in the simplest terms is a description of what, why, how and when student should learn. It is a means to achieve useful learning outcome and at the same time realise the expectations of the society. Curriculum is thus influenced by the culture, political, social and economic conditions prevailing in the region. The essence of quality curriculum is to enable a learner to acquire and create knowledge, skills and values with competencies and capabilities to contribute effectively to the society and sustain oneself. The focus is on quality learning to enhance individual potential. This is possible with a high quality, relevant and effective curriculum. The curriculum can be an enriching experience for the learner when it prepares him/her for life. Thus, the emphasis need to shifts to developing required skills. The council for the advancement of standards in higher education gives a very comprehensive view of expectations globally. This paper is developed based on the premise that curriculum needs an all-encompassing approach evolved by inter weaving the sustainable development goal.

According to CAS "These standards respond to real-time student needs, the requirements of sound pedagogy, and the effective management of more than 30 functional areas, consistent with institutional missions. CAS continues to have a major impact and growth potential as institutional effectiveness, student learning, outcomes assessment, accountability, and quality continues to increase in importance for the higher education community." The purpose of the study was to assess the skill developed among different disciplines at higher education level and suggest a roadmap to curriculum designing.

2. METHODOLOGY:

A survey was conducted developing a questionnaire in all the six domains taking into consideration the sub components in each of the domains. The questionnaire was developed consisted of twenty statements to be responded on two point scale. It was constructed with fifty percent positive and fifty percent negative statements. The validity and reliability of the questionnaire was established. The questionnaire was mailed to postgraduate students from M.A, M.Sc, M.Ed, MBA, B.Tech/M.Tech and M.S/ DNB (Medical). The results were analysed.

3. RESULTS AND DISCUSSIONS:

Results are discussed under the six domain. Each of the domains and related skills in the functional areas are to be identified and integrated into the teaching learning process

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Domain 1: Knowledge acquisition, construction, integration and application: The components included in this domain were, skill of comprehending knowledge, skill of connecting knowledge, ideas and experiences, constructing knowledge and relating knowledge to daily life It is important to understand knowledge from multiple disciplines, which require the skill of processing information from different sources and connecting knowledge, and expanding with one's own input and experiences. The art of integrating only can derive at right perception and leading to construction of knowledge. No two problems are the same, therefore articulating the information to practically solve daily life problem is in fact a skill rather than just application. This can be achieved by presenting subject matter as problem. All the respondents possess knowledge from of range of discipline and the skill of collecting information from the internet, text, observation and database but only 51% of them have the skill of connecting knowledge and relating to daily life. This probably could be achieved when subject matter was presented as problem.

Domain 2: Cognitive Complexity - The skill of critical thinking, reflecting, reasoning and integrating them to create a new ideas requires a lot of training of the thinking skills of an individual. It require perceiving things in right direction and questioning the same, skill to identify the right components and interpreting them, judging from a broader perspective and assessing the same to emerge with alternative solutions. Gathering information from variety of resources and reasoning with authenticity to bring to a single platform to give a unique solution. This could be done by encouraging students to list as many solutions as possible for the same problem and then discarding the common ones. Including action research as a compulsory component could remarkably improve all above mentioned skills. 57% of the respondents had developed critical thinking skills. All of them have developed reflective thinking skills and effective reasoning skills. 97% showed creativity with skill of integrating mental, emotional and creative processes. Encouraging students to list as many solutions as possible for the same problem and then discarding the common ones. Including research and portfolio as mandatory component in the curriculum.

Domain 3: Intrapersonal Development - It is important to assess, articulate, and acknowledge personal skills, abilities, and growth areas for identity development. The skill of spontaneous self- reflection to gain insight and function effectively and to articulate values and principles in accordance with one's own philosophy and commitment to ethics. Including assignment and assessment strategies that help learner to reflect and identify one's own strength and weakness. Maintaining a portfolio throughout the course could help learners not only reflect on one's own learning process and take control of it. All the respondents are capable of assessing, articulating and acknowledging personal skills, but 67% lack identity development. Aspects of commitment to ethics and integrity and spiritual awareness require a more in depth study. Maintaining a portfolio throughout the course could help learners not only reflect on one's own learning process and take control of it but generate ways to improve upon the weakness.

Domain 4: Interpersonal competence – Predominately includes skills that help establish healthy beneficial relationship that enhance competence, manage conflict effectively and demonstrate appropriate behavior. The ability to build a network of all the above and maximize on contribution and involvement of others leading to a collaborative effort to achieve goals. Developing skills to guide and assist a group and communicate effectively could be generic in collaborative teaching strategies and group projects. Compulsory component of community engagement at higher education level could enhance this competence.

Domain 5: Humanitarianism and civic engagement – Understanding, appreciating and accepting others culture and human differences. It is important for an individual to respond to social responsibilities in a positive way and imbibe the sense of civic responsibility and participate in the same. Community engagement at varied levels could instill the skill of interacting and engaging in welfare of others. 72% of the respondents were equipped to involve in social responsibility and civic responsibility but 29% lacked the skill. Community engagement at varied levels could instill the skill of interacting and engaging in welfare of others.

Domain 6: Practical competence: The components under consideration were pursuing goals, communicating effectively, and technological competence managing personal affairs, managing career development and demonstrating professionalism one of the most important skill is to identify and overcome obstacles to achieve goals. The skill to convey meaning in a way that others understand, make and evaluate presentation is inevitable. Technological competence helps to mobilise human resources and International orientation. Balancing personal affairs such as time management and career development required emphasis. Improvement in quality of work and accountability to demonstrates professionalism. This could be instilled by giving scope for student to continue and improve upon their work until they are satisfied. 55% lack skill of pursuing goals. 69% showed a competence of communicating effectively. 54% demonstrate technological literacy and skill of ethically using it to complete tasks. 73 % were not proficient in

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managing carrier development with personal affairs. 92% demonstrated the skill of improving the quality of ones' own work and work environment.

Table 1.1 **Results of the study - One Way ANOVA was conducted to find out the differences among the groups.**

Domains	**F**	**Level of Significance**	**Result**
Knowledge acquisition, integration and application.	4.72	sig at .016	Significant Groups Differ
Critical thinking, effective reasoning and creativity. (Cognitive complexity)	.86	sig at .43	Not significant Groups do not differ
Identity development.	1.46	Sig at .24	Not significant Groups do not differ
Interpersonal competence	3.79	Sig at .034	Significant Groups Differ
Humanitarianism and Civic Engagement.	1.52	sig at .22	Not significant Groups do not differ
Practical Competence	1.37	Sig at.26	Not significant Groups do not differ

- The one way ANOVA indicated the groups differ significantly with respect to knowledge acquisition, integration and application and Interpersonal and interpersonal competence. As the group was heterogeneous group encompassing Science, Arts, Engineering and Medical post graduates the different professional input differed.
- The groups do not differ significantly with respect to critical thinking, effective reasoning and creativity under the Cognitive complexity domain, Identity development, Humanitarianism and Civic Engagement and practical competence.

Thus, the re-designed curriculum requires to integrate skills to achieve sustainable development goal.

Roadmap to curriculum designing:

Table 2:

SDG → Skills ↓	**Inclusive & equitable**	**Quality Learning**	**Lifelong Learning**	**Holistic development**
Knowledge acquisition, construction, integration and application	Understanding Knowledge for a range of discipline Creating a conducive environment.	Construction of knowledge Engaging & Exploring curriculum	Relating Knowledge to daily life Passion for learning	Connecting knowledge to other knowledge, ideas, and experiences Reading habit, Thirst for knowledge
Cognitive Complexity	Thinking Critically Heterogeneous grouping for activity based learning	Research Methodology & Research skills	Reflecting as a continuous activity Reflective Journal writing. Designing one's own portfolio	Creatively integrating mentally & emotionally Modules to raise Emotional Intelligence of learner

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Intrapersonal Development	Realistic Being unbiased under all circumstances through project based learning. Accept facts.	Identity development Understanding self and developing one's own Philosophy	Commitment to ethics and integrity Code of conduct in the environment of the institution.	Spiritual awareness Finding peace and happiness Raising Spiritual Intelligence of learner
Interpersonal competence	Meaningful relationship Unbiased in relationship building that help in a positive growth.	Effective Leadership Experience the different responsibility as a leader	Collaboration Joy associated with Team work	Independent & Interdependence Collaborative teaching strategies on regular basis.
Humanitarianism and civic engagement	Understanding Human differences Problems of the society	Global perspective with national culture and values	Social Responsibility Community engagement programmes	Spiritual awareness Activities to make learner realize the true happiness.
Practical competence	Communicating effectively Key to inclusivity and equity	Pursuing goals SWOT analysis of self.	Managing personal affairs Skills such as time management, financial management etc.	Demonstrating Professionalism Personality development programme, soft skill programme

4. CONCLUSION:

Skills are generic that are important for higher education in their employment, successful competition, pursuing the right profession and contributing effectively to organizational mission and societal goals. It is the responsibility of education system in designing the curriculum, transactional processes and evaluation techniques. The major role is played by designing an all-encompassing curriculum that can be transacted integrating culture, values and ethnicity of the region. The curriculum may be designed in collaboration with the experts, faculty and students. The Draft National Education Policy also envisages vibrant multidisciplinary institutions for teaching and research in higher education with great emphasis on liberal education so as to facilitate cross-disciplinary and interdisciplinary thinking.

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