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SKILLS AND KNOWLEDGE DEMAND FOR INDUSTRY READY TOWN PLANNING GRADUATES

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Abstract

Emerging of new technologies skills are fundamentally changing how urban planners think, analyses and determine development decision. Application of mobile technologies and increase of public awareness are new challenges that affect traditional planning procedures and design process, resulting widening knowledge and skills gaps between town planning graduates and demand by the industry. This poses questions on the graduates' capability to meet the job market demands especially on handling town planning related tasks. Therefore, this research endeavours to determine current knowledge and skill demands among planning agencies by using quantitative research approach as main research strategy. Findings of the study suggest Spatial Information System, Online Mapping, Crowd Sourcing technology along with instilling collaborative and multidisciplinary soft skills, in the new syllabus are considered vital. Thus the implementation of a revised syllabus which take into consideration both knowledge and skills

components, would surely offers well equip market ready town planning graduates for government and private town planning agencies in Malaysia.

Keywords

Town Planning Education, Knowledge, Soft Skills, Rational Planning Approach, Malaysia
Planning

1. Introduction

Town Planner is a profession that develops and manages cities, towns and regions to achieve economically efficient and environmentally friendly development by easing or avoiding social, economic and environmental problems. A town planner who works with local government mainly make recommendations on matters pertaining to land use zoning, prepare proposal for new public buildings, parks and utilities, keeping in mind the long and short-term goals of the town's growth. Meanwhile, those who are attached with the federal governments are mainly involved with formulation of development policies and strategies. Their task is to ensure that development as a whole is sustainable and that the right balance of development is achieved to preserve the nation. Town Planners in Malaysia is governed by Town Planners Act, 1995 (Act 538) which stipulates the entitlement of registered town planners under sub-section 1 of section 13. These includes; Preparation of development plans (structure plans, local plans and special area plans). Conducting studies on urban, rural and regional development planning, including feasibility and environmental impact assessment studies relating to land use; and preparing and submitting applications for planning permission, subdivisional layouts, drawings and planning reports to any person or public authority for the purposes of developing any land.

Most town planning graduates in Malaysia are employed by Federal Department of Town and Country Planning, or also currently known as PlanMalaysia and Local Planning Authorities. Land Development and Regional Agencies such as UDA, FELDA and KEJORA also employ Town Planners. There are also job opportunities for town planning graduates with private sectors in planning, architecture and/or real estate firms. To perform duties in the profession, Town Planners must excel in these three traits; (1) software skills - ArcGIS, AutoCAD and Photoshop, (2) ability to write well; and (3) ability to speak clearly in public. The responsibilities of Town Planners require them to solve planning problems with imaginative solutions thus involving creative thinking and analytical skills. Recommend regeneration solutions in respond to changes with flexibility, initiative and innovative manners. Liaising with colleagues, developers,

architects, politicians and members of the public with good report-writing, communication and organisational skills. Able to work, both individually and in group in managing workload and projects. An aptitude for listening to, and negotiating with, a diverse range of people. It is best to conclude an effective Town Planner is one that is knowledgeable across diverse field of expertise and have good skills plus excellent soft-skills to deal with different actors in the development activities. However, emerging technologies and increase of public awareness are new challenges that affect traditional planning procedures and technology (B. Riggs, Chavan, & Steins, 2015). This certainly affect demand for new skills and knowledge among town planner especially in the Malaysia context.

Development approaches i.e sustainable development and smart cities adopted by various planning agencies around the globe are strongly empowering public by engaging them in various stage of planning activities (Nazar, Chaudhry, Ali, & Faheem, 2018; Yunus & Yang, 2011). The past decades saw involvement of public are nominal, with public engagement was merely took place during the final stage of planning activities to endorse decision made by expert or professional planners. Nevertheless, considering the growing emphasis on new partnerships and collaborations between planners and communities, town planners are demanded to be an effective communicator rather an innovative designer (Ajulor, 2018; Pojani, Johnson, Darchen, & Yang, 2018). The current planning activities require major revamp to traditional planning procedures and entailed technology used to reduce gaps between desired state determine by professional and actual needs of the community to reduce any conflicts that may surface along planning and implementation stages. Increase public participation not only limit to verbal communication i.e listening, arguing and explaining to make sense of the situations (Hemmens, 1980), hence, public engagement now days also involve sharing information of future development strategies affecting community living environment. Thus, new paradigm also emphasis on applying flexible planning procedures, improve public experience, public sourced data, that subsequently increasing citizen influence (Wainwright, 2017; Webb & Mills, 2016)

Numerous new methodologies have surfaced, of these is advancement in technology especially in mobile technology and application that are fundamentally changing how planners plan, develop and make decision (Riggs, Chavan, & Steins, 2015). Advancement in mobile technologies have expended platform for public not to limit to only physical engagements but also include internet and virtual platforms. The circumstance enable well-functioning planning processes that are decentralized, and grassroots whereas public participation are well

demonstrated in the planning processes (Mannberg & Wihlborg, 2008). Considering these, planning agencies around the globe are utilising mobile technologies to gauge public opinion on almost everything elements that form a city in producing municipal development plans (Marshall, 2017). Whilst, application of mobile technologies have mooted Google-fied neighbourhood that embedded smart city elements for development of on 12 acre waterfront, named Sidewalk Toronto (Marshall, 2017). As such, information for space and spatial planning are sourced sensors that gather insight of human/ citizen behavioural information from traffic flow, noise levels, air quality, energy usage, travel patterns, and waste output.

The emerging technologies are fundamentally changing how planners plan, develop and make decision (Riggs, Chavan, & Steins, 2015). This certainly affect demand for new skills and knowledge among town planner especially in the Malaysia context. Technologies representation in planning activities are viewed as enabling mechanisms that not only encourage public participation, facilitating comprehension and dialogue but also structuring city forms based on input gathered using advance technologies (Kane, 1990 in Bailey 2011). In this line, Hanzl (2007) strong believes on the impact of new technology able to bypass professionalism barriers. This poses questions on the graduates' capability to meet the challenges of new planning activities especially the effect of mobile technology. Thus it will be interesting to discover whether the skills and knowledge of graduates are as expected by future employers and industry. Therefore, the study aims to address the issues of knowledge and skills gaps by benchmarking knowledge and skills applied in town department in local agencies and professional planning consultant office. It is envisioned that outcomes of the research will be a framework for development of industry based academic programme that provide market ready future planner.

2. Literature Review

2.1 Rational Planning Approach

Rational planning is crux to most modern planning theories and procedure (Teriman, Yigitcanlar, & Mayere, 2009). The pre-modernist rational planning theory is traced back to Greeks era (Saul in Lawrence, 2000), whilst, a refined modern rational planning approach, containing problem, need or opportunity to be addressed, goals, objectives, and evaluation of alternatives emerged in the model in 1960's (Boyne, 2001; Lawrence, 2000). Rational planning carries the same weightage as evidence based planning, in which both procedures considered greatly on development of solutions in forms of strategies or policies derived from a structural

and critical analyses process. Though many modifications of, and alternatives to, the rational model have long accepted as guide to new theories (Hemmens, 1980).

The multi dimensionality of planning activities as deliberated in the rational planning approach, not only require knowledge component or know what, but also address the necessity to acquire with skills components or know how among planners. In most literature, rational planning is identified to put great emphasis on goal setting, identification of policy alternatives, evaluation of means against ends, and implementation of decisions (Lawrence, 2000; Lew, 2007). The model embedded sequential multi-step model that aims to formed logical and orderly path from problem identification through development of solutions (Robbins & Judge, 2007). The model is initiated when dissatisfaction upon current conditions is expressed. Planner as the main actor in the process, defined goals and outline strategies that leads to desired outcomes. These goals and strategies are to be most likely to produce some holistic outcomes at an acceptable cost is design, implementation, and evaluation after consider future iterations of the current conditions (Julian & Lyons, 1992). These goals and strategies strategically determine both longitudinal and immediate information needed as evidences in data analyses stage. Findings of the analyses are then used to suggest development alternatives that entailed with evaluation measures. Ending the model is application of alternatives that yielded the best outcomes in a series of programs.

Using the rational planning in the study, suggesting planners should not only acquire knowledge on city, instead, planners are also compelled to embrace various skills to enable them to perform tasks related to development project implementation e.g design, operation and production, (Christophe, 2015; Lawrence, 2000). In doing so, planners should be equipped with knowledge concerning to city and its' components in order to clearly identify problems arouses and also regulatory conditions. The knowledge components is also beneficial to orient development goals based on the desired state of any development. Enquiring skills encompasses of empirical analyses and data gathering & retrieval formed sensible research skills to determine project needs and demand, evaluation of alternatives and listing measurement criteria to assess alternatives. Whilst, the rational planning approach strongly addresses the need for technical skills among planners in order to record and details problems, present alternatives for problem retraction and display possible alternatives in various communication mediums.

2.2 Skills and Knowledge Variables

In the primary stage, this study proposed a general categorization of skills and knowledge based on the list generated from Greenlee, Edwards, & Anthony (2015a). The list were then cross references with criteria derived from professional bodies, career centers and literature pertaining to planning education; i.e Australia, American Planning Association, The Royal Town Planning Institute of United kingdom; Career Center Australia, Association of European Schools of Planning. The exercises have successfully identified 33 key attributes that are then grouped into four main categories which are knowledge, enquiry, technical and soft skills. Each component in these categories are discussed and explained in the following sub sections.

2.3.1 Knowledge Components

Knowledge help planners to view the complexity of the city. Regulations and local government by-laws are tools used to manage city. As such planners are deemed to comprehend, communicate and advocate policy makers, developers and community on the matters pertaining to legal procedural, planning process, domestic laws, ordinance and policy that includes state and federal legislation and court rulings that relate to the project, plans, or guidelines (American Planning Association, 2018; Mannberg & Wihlborg, 2008). Knowledge on urban spatial structure, characteristics and understanding the way in which cities work is a requisite for a planner. Knowledge in this line contributes to the ability to perceive a situation particularly pertaining to possible development impacts e.g., traffic congestion and intensity due to interacting urban components e.g., population density, land-use density, alternative means of transportation. Subsequently, these components are determine living quality in the city areas especially to local housing markets, economic activities and municipal revenue. (Gaber, 2007; Minnery & Searle, 2014). Given the substantial impacts, it is plausible that local governments may demand greater expertise in these areas.

A study conducted by Greenlee et al., (2015) also suggesting planners to be equipped with knowledge on community and economic development along with physical planning. Knowledge on economic aspects and analyses of projects or policies e.g. cost benefit analysis, real estate investment analysis, program budgeting and input-output analysis, certainly develop a good economic foundation for a planner. As such, boundless knowledge on physical planning environment require understanding on interaction among various planning fields i.e. economy, social, environment and physical (American Planning Association, 2018).

2.3.2 Enquiry

The enquiring skills determine how planner conceptualise, approach and dismantle arising issues and problems afore of any possible solutions. Relating enquiry to rational planning approach, the skill requisite systematic process of objectives attainment by addressing problems using apt techniques and methodology. Baird & Papageorgiou, (2015) considers the collection and elaboration of relevant data are meant for development of “new” knowledge, therefore can be considered as a prudent skills to develop enquiring sensibility among new generation of planners.

2.3.3 Technical

Planner as a profession adapts functional rationality that involved with methodological empirical analyses and scientific technique to effectively explain human activities. Conversely, Hemmens (1980) ascertained, planners should also postulated as effective advisor and moral agent that principally assist community through listening, arguing and explaining to make sense of the situations the communities are in. In this line, Hemmens, (1980) argue the communicating activities in broad are more superior to technical skills for planner to be equipped with. However, this study is suggesting technical skills that entailed with data management, visualisation and recording are prudent to provide objectives evidences and configure subjective perception into tangible facts during the process of convincing and communicating with stakeholders. In this line, technical skills aid planners to enlighten, diffuse, argue, explain and bring agreement of various stakeholders on all possibilities solutions and limitation in the course of decision making process. Technical skills that involve designing materials for deliberation, mapping and geo-referencing spatial data information, recording quantitative and qualitative data, update maintenance information relating to community on website/ mobile devices, multimedia communication and community engagement certainly improve public participation during any planning activities. Application on listed skills are not exclusively identified in certain planning activities e.g analyses or proposal development, but instead are profoundly applicable throughout the course of planning activities.

2.3.4 Soft Skills Attributes

Soft Skills attributes pertaining to the skills that are not directly attributed in the formal learning, instead commonly embedded indirectly in education pedagogy such studio activities, visits and case study. In planning particularly, traditionally, studio activities instil integration of skills and knowledge in field through teamwork, problem finding and solving activities,

professional socializing experience, on top of visualising skills using AutoCAD and sketchup (Hollander & Thomas, 2009). Explicitly, soft skills are abilities encompassing of three traits which are leadership management, communication and engaging with stakeholders and communities.

Being an important character in decision making, planners are commonly attributed by leadership and management traits. This is particularly in visualising possible outcomes of a proposed development. The process of visualisation involved with inventive and creative vision development, conceptualise and foresee possible challenges, resolving conflicts between stakeholders and being a mediator or facilitator during conflict and advisor to decision maker. In this line, effective communication is considered as the key trait to convince parties involved during decision making and to persuade communities on the aftermath of any decision made (Mannberg, 2006; Mannberg & Wihlborg, 2008; Van Dijk, Der Vlist, & Van Tatenhove, 2011). Planner in this sense, are demanded to be equipped with the ability to effectively consult the stakeholders i.e politicians, attorneys, and other technical agencies on technical details of development. On the other hand, during informal circumstance, the communication capabilities bares the need for a planner to adapt with negotiation skills, to facilitate and persuade communities (Greenlee, Edwards, & Anthony, 2015b).

3. Research Process and Methodology

The research applies quantitative research approach through a survey that was conducted among professionals with planning background. The research approach was also applied in the data collection, analyses and interpretation. The selection of the approach for this study is suitable considering the aim of the research is to understand and identify factors that influence an outcome (Creswell, 1994).

This study, firstly, conduct intensive academic literature to identify skills and knowledge pertaining to planning activities as postulated by the rational planning approach. Literatures were identified through online databases mainly in Google scholar, Web of Science and Scopus, in addition to webpages of planning institutions around the globes. The search was using key works “skills” and “knowledge” or other synonyms. Articles retrieved were filtered to ensure they are published between 2000 and 2018. This is due to gather the most updated information about skills and knowledge of planning graduates in the modern era.

Second, instrument for the study was developed considering two main criteria which are to include current variables as input and to adapt subject completed instrument or self-administered survey technique. The survey instrument was divided into four (4) main sections. The first section aims to gain insight on the respondents' education and working experiences. The second section aims to evaluate planning activities, skills and knowledge that are considered important for planning graduate. Each variable was assessed using 5 Likert-scale items based on each variable relevancy and application towards each category. Open ended questions were also provided to allow any suggestion be made variables used and recommend potential variables that were not included.

Third, for data collection, the research adopted survey method to gather information on relevancy of skills and knowledge attributes in performing planning activities by respondents. The method is believed to be able to provide information about characteristics, attitude, or behaviours of population (Creswell, 1994). Dissemination of the electronic survey form were conducted through online survey tools. Various online survey tools such Google Form, Survey Monkey and Type Form are available in the net, however, comparison made by the research identified application of Google Form have the advantages of allowing unlimited questions, distributions to unlimited number of respondents, thus allowing data transformation to excel or Google sheets.

Forth, samples for the study were selected using pre-determined criteria which are education background, years of working experience and nature of work. Respondents with town planning educations either in diploma or bachelor degree, with working experience more than 2 years and currently working in the build environment are key criteria used during the respondent selection process. Respondents who have participated were also requested to recruit potential respondents with similar traits among their acquaintances. Although, the approach may have great tendency to partiality estimate trend of the population, the adaptation of snowball approach have able to gain significant number of samples and reached the "*hidden*" population, therefore have outweighed the potential bias of the method to the study findings. In the initial stage, total number of respondent participated in the study was 105. However, application of the criteria, reduced the number of valid respondents to 88.

Fourth, data gathered from the survey were empirically analyses in three stages. In the first stage, variables in each category were assessed to determine each variable tendencies and level of dispersion by observing mean score, median and standard deviation. Next, in the second

stage, the average score for each variables were compared between subsamples of public planners and planning consultant. Third, further analyses were conducted by eradicating attribute category to allow comparison across variables be made. The categorisation method is commonly used in geographical information system research to produce convenient and apprehensible findings (Rashid & Yigitcanlar, 2015; Yigitcanlar, Sipe, Evans, & Pitot, 2007). Data categorisation method as mentioned in earlier section was executed by transforming each variable score into scale of five (5); most important, important, moderate important, less important and least important. The data was ranged between 4.03 to 4.76 or 0.72, indicating narrow differences between scores and indicating high level of consensus between respondents. The value is then divided into five to produce gap value of 0.14 between categories. Calculated range for each category is listed below.

Table 1: *Data range for each category of importance*

Min	4.03
Max	4.76
Most Important	4.61 and 4.76
Important	4.60-4.48
Moderate	4.47- 4.33
Less Important	4.32-4.19
Least Important	4.19-4.03

4. Results

4.1 Skills and Knowledge Variables

In the knowledge category, the research identified scores between variables in this category are slightly varies. The highest score was 4.75 for knowledge in planning structure and the lowest score is for economy analyses with 4.44 score. With mean score for this category is 4.62, the study identified that only planning structure, understanding city, social and environment impact and diversity of planning, have score higher than the average.

Table 2: Variables in Knowledge Category

	N	Min.	Max.	Mean	Std. Deviation
Planning Structure	88	3	5	4.75	.509
Understanding City	88	3	5	4.74	.514
Social and Environmental Impact	88	3	5	4.70	.506
Diversity of Planning	88	3	5	4.68	.492
Community Planning	88	3	5	4.61	.576
Legal Foundation	88	1	5	4.58	.754
Design and Aesthetic	87	3	5	4.48	.662
Economy Analyses	88	3	5	4.44	.658
Average				4.62	

For variable in the inquiry category, mean score was identified slightly lower compared with the knowledge category. This category mean score was recorded with 4.49 with information gathering, strategies/ conclusion development and evaluation have scores higher than the category average.

Table 3: Variables in Inquiry Category

	N	Min	Max	Mean	Std. Deviation
Information Gathering	85	2	5	4.55	.608
Strategies/ Conclude	85	2	5	4.54	.628
Evaluation	85	2	5	4.53	.628
Synthesis	86	2	5	4.48	.715
Crowd Sourcing	86	2	5	4.47	.645
Empirical Analysis	86	2	5	4.45	.645
Information Retrieval	86	2	5	4.44	.662
Mean/Average				4.49	

Assessment made on the technical skills variables identified mean score for the category is 4.40. Highest score was for mapping with score of 4.7, while the lowest score or 4.03 is for Web Design and Maintenance. Comparison made between variables score and mean score

identified five variables, Mapping, Data Management, Community Engagement, Design and Visual Communication have score more than the category average.

Table 4: *Variables in Technical Category*

	N	Min	Max	Mean	Std. Deviation
Mapping	86	3	5.0	4.70	.487
Data Management	85	3	5.0	4.58	.543
Community Engagement	86	3	5.0	4.52	.608
Design	86	3	5.0	4.49	.628
Visual Communication	86	2	5.0	4.48	.646
Recording	86	2	5.0	4.24	.781
Digital Publication	86	1	5.0	4.15	.847
Web Design and Maintenance	86	1	5.0	4.03	.951
Mean/Average				4.40	

Soft Skills attributes were observed to have higher average scores compared to skills and knowledge attributes in other categories. Average score for attributes in this category is 4.69 with seven variables had scores more than category mean score. Collaborative and Multidisciplinary Working received the highest score or 4.76 while the least is Grantsmanship. Interestingly, all variables minimum scores are above 4, signifying all variables are important.

Table 5: *Variables in Soft Skills Category*

	N	Min	Max	Mean	Std. Deviation
Collaborative and Multidisciplinary Working	86	3	5	4.76	.459
Interact	86	3	5	4.73	.471
Creative Vision	85	3	5	4.73	.497
Conflict Resolution	85	3	5	4.73	.473
Negotiation	85	3	5	4.72	.478
Leadership	86	3	5	4.70	.487
Oral Communication	86	3	5	4.70	.510

Community Organisation	86	3	5	4.66	.500
Granstmanship	86	3	5	4.49	.682
Mean/Average				4.69	

4.2 Skills and Knowledge Public and Consultant Planner

Comparison made between subsample mean score identified public planner give higher score for knowledge compared to planning consultant. However, further analyses identified preference of both subsamples on knowledge variables are almost similar with both subsample valued planning structure, understanding city, social and environmental impact and diversity higher than other attributes. Yet, public planners assessed legal foundation as an important knowledge component for planners.

Table 6: *Knowledge Variables Preferences between subsamples*

Knowledge Variables	Public Planner	Planning Consultant
Planning Structure	4.81	4.70
Understanding City	4.79	4.70
Social and Environmental Impact	4.74	4.67
Diversity of Planning	4.74	4.63
Legal Foundation	4.81	4.37
Economy Analyses	4.52	4.37
Community Planning	4.52	4.37
Design and Aesthetic	4.52	4.37
Mean/Average	4.68	4.52

Table 7: *Inquiry Skills Preferences between subsamples*

	Public Planner	Planning Consultant
Information Gathering	4.54	4.57
Strategies/ Conclude	4.56	4.52
Evaluation	4.59	4.48
Synthesis	4.49	4.47

Empirical Analysis	4.46	4.44
Information Retrieval	4.46	4.42
Crowd Sourcing	4.46	4.47
Mean/Average	4.51	4.48

For the inquiry category, both groups were identified to show similar preferences on the variables listed as mean scores of variables are almost similar therefore suggesting high consistency between subsamples. Both subsamples were identified rated high on information gathering, development of strategies and conclusion and evaluation. However, synthesis was also considered important with high score than the mean score in the public planner subsample.

Table 8: Technical Skills Preferences between subsamples

	Public Planner	Planning Consultant
Mapping	4.71	4.69
Management	4.65	4.51
Community Engagement	4.63	4.42
Design	4.51	4.47
Visual Communication	4.61	4.36
Recording	4.39	4.11
Digital Publication	4.27	4.04
Web Design and Maintenance	4.24	3.84
Mean/Average	4.50	4.31

As shown in Table 9, both group have indicated mapping, management, community engagement, design and visual communication as key skills in the technical category. Public planner also include visual communication as important technical skill. Further observation however identified, public planner gave higher scores compared to planning consultant.

Table 9: *Soft Skills Preferences between Subsamples*

	Public Planner	Planning Consultant
Collaborative and Multidisciplinary Working	4.71	4.80
Interact	4.73	4.73
Creative Vision	4.75	4.71
Conflict Resolution	4.73	4.73
Negotiation	4.68	4.75
Verbal Communication	4.66	4.73
Leadership	4.66	4.73
Community Organisation	4.61	4.71
Granstmanship	4.54	4.44
Mean/Average	4.67	4.70

The finding as shown in the table 4.9 are suggesting that soft skills were valued highly by planning consultant rather than public planners. Comparison made with category mean score identified almost all variables in this categories are considered important to the planning consultant, whereas only four variables are above the category average score based on the evaluation by public planner. In this line, both groups give high score for collaborative, interact, creative vision and conflict resolution skills, while negotiation, verbal communication, leadership and community organization are additional skills required by planning consultant.

4.3 Framework for Town Planning Graduates

Further analyses were conducted by eradicating attribute category to allow comparison across variables be made. Data categorisation method as mentioned in earlier section was executed by transforming each variable score into scale of five (5); most important, important, moderate important, less important and least important. The analyses reveals, of the total variables, 43.8 per cent are considered as most important, 37.9 per cent is important, 16.7 per cent is moderate important, 4.3 less important and 9.5 least important. Attributes categorised in the most important are mainly derived from soft skills and knowledge categories. Of these categories, eight variables were from soft skills category, five variables from Knowledge and one from Technical category.

On the other hand, Technical and Inquiry Skills are categories that received lesser scores. Further analyses indicated that IT based technical skills, Digital Publication Web Design and Maintenance are the least relevant.

Table 10: Skills and Knowledge based on rank of importance

Rank	Skills and Knowledge Category			
	<i>Knowledge</i>	<i>Enquiry</i>	<i>Technical</i>	<i>Soft Skills</i>
Most Important	<ul style="list-style-type: none"> • Planning Structure • Understanding City • Social and Environmental Impact • Diversity of Planning • Community Planning 		<ul style="list-style-type: none"> • Mapping 	<ul style="list-style-type: none"> • Collaborative and Multidisciplinary Working • Interact • Creative Vision • Conflict Resolution • Negotiation • Leadership • Oral Communication • Community Organization
Important	<ul style="list-style-type: none"> • Legal Foundation • Design and Aesthetic 	<ul style="list-style-type: none"> • Information Gathering • Strategies/ Conclude • Evaluation • Synthesis 	<ul style="list-style-type: none"> • Management • Community Engagement • Design • Visual Communication 	<ul style="list-style-type: none"> • Granstmanship

5. Discussion

5.1 Knowledge and Skills for Town Planner

The study deemed to determine key knowledge and skills required in fulfilling the task of a planner, with aspiration to give insight qualities of graduates required by the planning industry, particularly in Malaysia. During the process, various skills and knowledge in the literature were read thoroughly and analysed to discover key values required in the modern planning field. To ensure the study to also include the perspective of the planning industry and employment market, values postulated by planning institutions and career centers both locally and internationally were also considered. These values were then read thoroughly and associated with rational planning approach and entailed planning activities prior to being considered in the study. With the new knowledge developed, the study proposed a framework of planning skills and knowledge that can be applied to develop an industry ready town planning program or curricular.

Rational planning approach which is the crux to most modern planning theories and procedure was considered in the path to develop a comprehensive overview on activities pertaining to planning. The brief structure of the approach is formed by problem or need identification, followed by development of goals, objectives, and criteria; data gathering, generation and evaluation of proposals and alternatives; and implementation. The approach embedded sequential multi-step model that aims to formed logical and orderly path from problem identification through development of solutions. Further exploration identified skills and knowledge acquired are closely related with planning activities as postulated by the approach. Although, certain skills and knowledge are correspond with a specific activity, however most activities required contemporaneous application of skills and knowledge. Using the approach, 33 skills and knowledge attributes were identified, later were grouped into knowledge, enquiry, technical and soft skills categories. In the knowledge category, four attributes, planning structure, understanding city, social and environmental impact, diversity of planning have scores higher than the category average. As these values are associated with low standard deviation with other empirical findings these trend is suggesting consistent assessment patterns across respondents. Variables in the inquiry category however have a relatively low average scores compared to the attributes in the knowledge category. This resulted only three variables; ability to gather information, develop strategies & conclude and evaluation skills have scores higher than the category mean score, therefore are considered key variables in this

category. Following is assessment on technical skills variables. Average score for the category is relatively lower than the average score of all categories. However, mapping skill is the only variable in the category to receive a considerable high score across all categories, signifying the importance of mapping skills for planner. Soft skills attributes were observed to have higher average scores compared to attributes in other categories, thus most of the variables received higher scores than the average score in each category.

5.2 Skills and Knowledge Based on Nature of Work

Next, the attributes performance between subsamples understudied were analysed to explore possible preferences based respondent nature of work. The study imposed two categorization to divide the respondents. The first group is public planner, referring to planners working in the government agencies federal, state and local government offices. The second group are planning consultant which is referring to private planners working either as full time or part time consultants. The study reveals some distinct preferences of skills and knowledge values across the subsamples. For knowledge and enquiry category, both public planners and planning consultant shows similar rating trends while assessing the variables. Both subsamples give high rates for comprehension on planning structure, understanding city, social and environmental impact and planning diversity. While information gathering, development of strategies and conclusion and evaluation in the inquiry category. Variables in the technical skill category received higher scores from public planners suggesting these skills are deemed in the segment. Other skills that are considered significant were Management, Community Engagement, Design and Visual Communication. Although both subsamples show almost similar rating trends for soft skill variables, planning consultant give higher score for most variables in this category compared to public planner. The findings of the study conclude that public planners put greater values for technical skills, while planning consultant weigh soft skills higher than other variables. This interesting findings are assumed to relate with the physical environment and scope of work of the subsamples. Public planners at local governments in Malaysia are mainly dealing with matters pertaining to land use zoning, prepare proposal for new public facilities and development controls. Undertaking these tasks in a public or government based agencies commonly entailed with standard operation procedures and structured working process. In this line, public planners are responsible to produce evidences for meeting or discussion with stakeholders, mapping and geo-referencing spatial data information, recording quantitative and qualitative data, update and maintenance information to acknowledge community pertaining to

future developments. Conversely, public consultant in the Malaysian context are mostly like prepare proposal in form of layout design or strategic development reports. These tasks required them to conceptualize and foresee possible challenges and resolve conflicts between stakeholders at the same time are constrained with finite resources. The circumstance required multi-tasking planner that equipped with not only with technical skill but equipped with management, communication and public engagement abilities. Importantly, planner in working as consultant considered collaborative in multidisciplinary working environment is a pivotal component

5.3 Significant Skills and Knowledge

As to conclude the study, a list of skills and knowledge were arrange based on framework of importance using categorization method. Most important category in the framework are mainly formed by knowledge and soft skills variables. The findings also suggesting future planning graduates should well versed on soft skills elements along with other traditionally technical skills acquired by a town planner. Important category on the other hand is composed by relatively similar numbers of skills and knowledge. The second tier are mainly attributed by enquiry and design skills variables which are traits of managerial planners. Forming the bottom section of the framework are the moderately and least performed variables that are commonly not traditionally related skills or knowledge in the town planning profession. However variables such crowd sourcing, web design and management and digital publication which involve application of technology in planning activities are considered skills for future planner. (W. Riggs, 2016; Seltzer & Mahmoudi, 2013; Webb & Mills, 2016). However these application of new forms of skills in the planning activities in Malaysia are underexplored and worth for study.

Variable composition in the most and important categories are traits commonly identified among senior planners. These are valued important as most of the respondents are senior planner in their agencies. Therefore, application of the framework is more suitable for development of post degree program or master courses. As for development of undergraduate program using the framework, moderation of the variables in the syllabus pedagogy should be carefully performed. The study recommend application of important soft skills such as managerial, communication and public engagement skills, as identified in the study are indirectly embedded during studio projects. As postulated by Pojani et al. (2018) studio is a widely accepted pedagogy method meant to equip planners with soft skills and learn to deal with contemporary issues.

As a conclusion, planner is a profession that develops and manages cities, towns and regions is deemed to be knowledgeable across diverse components forming a city. Along with this, planner should also be equipped with technical skills and enquiry skills to gather, record and subsequently develop new knowledge about a city. Using these information, proposal in form of layout or report is developed to address issues arise. To progress planning education in broad and profession in specific, soft skills should be embedded in various stage either in planning pedagogy or career development approach.

6. Conclusion

Planner requires multi-dimensional skills and knowledge while managing cities, towns and regions. Clearly, in completing planning needs, planners are compelled to embrace various skills and knowledge to device and regulate development activities. Findings from both public and private agencies suggesting similar treats of quality for future town planners. The findings of the study were conditioned by the method applied during the data collection. Although the study considered various aspects prior to embarking on self-administrated data collection method, future research would benefit from using interview or semi structured data collection methods to gain better insight on the studied issues. Although the study has able to identify key skills and knowledge for future planners, however generalisation of the study only applicable to area that fit the professional practice and planning intuitions background similar to Malaysia. Considering the challenges on the town planning profession, knowledge and skills components that are aligned with the modern planning activates needs to be delved and embedded in planning syllabus development in order to produces market ready graduates for government and private town planning agencies in Malaysia.

References

- Ajolor, O. V. (2018). The challenges of policy implementation in Africa and Sustainable Development Goals. *PEOPLE: International Journal of Social Sciences*, 3(3).
<https://dx.doi.org/10.20319/pijss.2018.33.14971518>
- American Planning Association. (2018). Choosing the Planning Profession. Retrieved from <https://www.planning.org/choosingplanning/>
- Baird, D., & Papageorgiou, M. (2015). Planning matters ! Tools for real town planning in the classroom. Rotorua.
- Boyne, G. (2001). Planning, Performance And Public Services. *Public Administration*, 79(1),

- 73–88. <https://doi.org/10.1111/1467-9299.00246>
- Christophe, D. (2015). University Curricula in Urban and Regional Planning in France: a Promoted and Recognised Quality. In I. Mironowicz (Ed.), *Excellence in Planning Education: Local, European & Global Perspective*. AESOP Planning Education.
- Creswell, J. W. (1994). *Research design: Qualitative & quantitative approaches*. Sage Publications, Inc.
- Gaber, J. (2007). Simulating Planning. *Journal of Planning Education and Research*. <https://doi.org/10.1177/0739456X07305791>
- Greenlee, A. J., Edwards, M., & Anthony, J. (2015a). Planning Skills. *Journal of Planning Education and Research*, 35(2), 161–173. <https://doi.org/10.1177/0739456X15570321>
- Greenlee, A. J., Edwards, M., & Anthony, J. (2015b). Planning Skills. *Journal of Planning Education and Research*. <https://doi.org/10.1177/0739456X15570321>
- Hanzl, M. (2007). Information technology as a tool for public participation in urban planning: a review of experiments and potentials. *Design Studies*. <https://doi.org/10.1016/j.destud.2007.02.003>
- Hemmens, G. C. (1980). New directions in planning theory: Introduction. *Journal of the American Planning Association*, 46(3), 259–260. <https://doi.org/10.1080/01944368008977041>
- Hollander, J. B., & Thomas, D. (2009). Commentary: Virtual Planning. *Journal of Planning Education and Research*, 29(1), 108–113. <https://doi.org/10.1177/0739456X09334142>
- Julian, A., & Lyons, T. S. (1992). A Strategic Planning Model for Human Services: Problem Solving at the Local Level. *Evaluation and Program Planning*, 15, 247–254. [https://doi.org/10.1016/0149-7189\(92\)90088-C](https://doi.org/10.1016/0149-7189(92)90088-C)
- Lawrence, D. P. (2000). Planning theories and environmental impact assessment. *Environmental Impact Assessment Review*, 20(6), 607–625. [https://doi.org/10.1016/S0195-9255\(00\)00036-6](https://doi.org/10.1016/S0195-9255(00)00036-6)
- Lew, A. A. (2007). Invited commentary: Tourism planning and traditional urban planning theory—the planner as an agent of social change. *Leisure/ Loisir*, 31(2), 383–391. <https://doi.org/10.1080/14927713.2007.9651387>
- Mannberg, M. (2006). Communicative Planning – (How) Does It Work ? *Development*.
- Mannberg, M., & Wihlborg, E. (2008). Communicative planning – friend or foe? Obstacles and opportunities for implementing sustainable development locally. *Sustainable*

- Development*, 16(1), 35–43. <https://doi.org/10.1002/sd.325>
- Marshall, A. (2017). Alphabet Is Trying To Reinvent the City , Starting With Toronto. *Wired Magazine*, 1–16.
- Minnery, J., & Searle, G. (2014). Toying with the City? Using the Computer Game SimCity4 in Planning Education. <https://doi.org/10.1080/02697459.2013.829335>
- Nazar, R., Chaudhry, I. S., Ali, S., & Faheem, M. (2018). Role Of Quality Education For Sustainable Development Goals (SDGS). *People: International Journal of Social Sciences*, 4(2).
- Pojani, D., Johnson, L., Darchen, S., & Yang, K. (2018). Learning by Doing: Employer Expectations of Planning Studio Education. *Urban Policy and Research*. <https://doi.org/10.1080/08111146.2016.1221814>
- Rashid, K., & Yigitcanlar, T. (2015). A methodological exploration to determine transportation disadvantage variables : the partial least square approach. *World Review of Intermodal Transportation Research*, 5(3), 221–239. <https://doi.org/10.1504/WRITR.2015.069223>
- Riggs, B., Chavan, A., & Steins, C. (2015). City Planning Department Technology Benchmarking Survey 2015. Retrieved from <http://www.planetizen.com/node/73480/city-planning-department-technology-benchmarking-survey-2015>
- Riggs, W. (2016). Mobile responsive websites and local planning departments in the US: Opportunities for the future. *Environment and Planning B: Planning and Design*. <https://doi.org/10.1177/0265813516656375>
- Robbins, S. P., & Judge, T. A. (2007). *Organizational Behavior*. New Jersey: Person Education. Inc.
- Seltzer, E., & Mahmoudi, D. (2013). Citizen Participation, Open Innovation, and Crowdsourcing: Challenges and Opportunities for Planning. *Journal of Planning Literature*, 28(1), 3–18. <https://doi.org/10.1177/0885412212469112>
- Teriman, S., Yigitcanlar, T., & Mayere, S. (2009). Sustainable urban development: A quadruple bottom line assessment framework. In *The second infrastructure theme postgraduate conference: conference proceedings* (pp. 228–238). Queensland University of Technology, Faculty of Built Environment and
- Van Dijk, J., Der Vlist, M. van, & Van Tatenhove, J. (2011). Water Assessment as controlled informality. *Environmental Impact Assessment Review*, 31(2), 112–119.

<https://doi.org/10.1016/j.eiar.2010.04.009>

Wainwright, O. (2017). Tinder for cities: how tech is making urban planning more inclusive | Cities | The Guardian. *The Guardian*, 2–5. Retrieved from

<https://www.theguardian.com/cities/2017/jan/24/tinder-cities-technology-making-urban-planning-interactive>

Webb, S., & Mills, E. (2016). User Research Insights Report: : Prototyping The Future of Planning.

Yigitcanlar, T., Sipe, N., Evans, R., & Pitot, M. (2007). A GIS-based land use and public transport accessibility indexing model, *44*, 30–37.

Yunus, R., & Yang, J. (2011). Sustainability criteria for Industrialised Building System (IBS) in Malaysia. *Procedia Engineering*, *14*, 1590–1598.

<https://doi.org/10.1016/j.proeng.2011.07.200>