**Skills to stay: Social processes in agricultural skill acquisition in rural Karnataka**

**Soundarya Iyer**[1] **and Nitya Rao**[2]

**Authors' affiliation:** [1] Iyer: Associated Researcher, French Institute of Pondicherry*, India (soundaryai@rvu.edu.in); [2] Rao: Professor, Gender and Development, School of International Development, University of East Anglia, Norwich, UK (N.Rao@uea.ac.uk)

**Corresponding author:** Soundarya Iyer, email: soundaryai@rvu.edu.in

**Author biographical note**

Soundarya Iyer is an Associated Researcher at the French Institute of Pondicherry and Assistant Professor at RV University, Bengaluru. She is currently studying the sociology of the decline in female labour force participation in rural Karnataka and Tamil Nadu.

ORCID: https://orcid.org/0000-0001-8307-4870
Twitter: @soniyer

Nitya Rao is Professor, Gender and Development at the University of East Anglia, Norwich, United Kingdom. She has worked extensively as a researcher and advocate in the field of women's rights, employment and education for over three decades. Her research interests include exploring the gendered changes in land and agrarian relations, migration and livelihoods, especially in contexts of climatic variability and economic precarity. She has done fine-grained research on households and intra-household dynamics in these contexts to draw out implications for gendered wellbeing, empowerment and justice. She has published extensively on these themes.

ORCID: https://orcid.org/0000-0002-6318-0147
Twitter: @nityarao63

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* Current affiliation: Assistant Professor, RV University, Bengaluru, India.

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## Abstract

Skill development is considered to be critically important for the eradication of poverty and social inclusion in the Global South. The Indian government launched broad reforms under the Skill India Mission in 2015 to train 400 million Indians by 2022. However, little is known about the social processes of skill acquisition, especially within the agricultural sector in rural India. In 2020-2021, we conducted work-life course interviews with 66 men and women between the ages of 18-65 in a village in southern Karnataka to better understand the informal and non-formal processes of skill acquisition in agriculture and allied activities. We argue that in the absence of formal skilling opportunities, the existing informal and non-formal skilling landscapes are filtered through the intersecting identities of gender, generation, caste, and class, and are central in shaping farming futures.



**Keywords:** Skills; Learning; Agriculture; Gender; Karnataka; India


## 1. Introduction

In January 2021, we met Sashi, a 33-year-old agriculturist at his home in the Dalit colony in Iggaluru[1] in Southern Karnataka. He wore a Skill India Mission T-shirt. We enthusiastically asked him to tell us how he acquired the T-shirt. He said,

> "Someone had come to our village from the Skill India Mission, and they took our Aadhaar cards and got our ID cards made. I also collected our neighbours and got their ID cards made. At that time, they gave me the T-shirt."

Curious that no skill training had taken place, we asked if any further training was given to them, and he replied,

> "We were told that they will come to our village later, make groups, bring officers, and then they never came back".

Sashi's experience reflects a wider issue with the processes of skill acquisition across rural India. In 2015, the National Skill India Mission committed itself "to achieve skilling at scale with speed and standards"[2], yet most young people in rural India and indeed the Global South, continue to acquire skills in the absence of formal training programmes (Chea and Huijsmans, 2018). Skill trainings are targeted primarily at those leaving agriculture and seeking to engage with industry or services, albeit in the informal economy. Given this bias, education to employment transitions, and the training on offer, are mediated strongly by social expectations of gender, caste, and class.

More so, given the crisis in Indian agriculture, reflected in the subdivision of land parcels over generations, falling groundwater levels, rising indebtedness and farmer suicides (Vasavi, 2009; Basole and Basu, 2011; Zaveri *et al.*, 2016). While 54.6 per cent of total workers are engaged in agriculture as per the Census of India 2011, agriculture contributed only 18.32 per cent of the GDP in 2020[3]. The NSSO's 2003 Situation Assessment Survey finding that 40

[1] We use the real name of the village. All respondents are anonymized.
[2] https://msde.gov.in/en/reports-documents/policies/NSDM (Accessed on 3 September 2021)
[3] https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?name_desc=false&view=map (Accessed on 4 May 2022)

per cent of full-time farmers did not want to farm, given a choice, is then unsurprising (Agarwal and Agrawal, 2017). Yet given the absence of decent jobs, especially for young rural women, as reflected in the declines in labour force participation rates over the past three decades (Thomas, 2020; Iyer, Srinivasan and Rao, 2022), young people are increasingly staying in or returning to farming and agricultural livelihoods, at least part-time, to secure their futures (Li, 2017). In this paper we focus specifically on those who stay in farming to understand how agricultural skills are acquired, or indeed upgraded, to keep up with new developments in agricultural technologies and practices. We further investigate the social life of skills i.e., "the social processes, relationships, and ideologies that enable (or constrain) people's access to skills, and subsequently to employment, wages, satisfaction and dignity" (Carswell and De Neve, 2018, p. 313).

The next section reviews the literature on skill acquisition in agriculture, and the processes of socialisation embedded therein. Section 3 outlines the context of agriculture and allied activities in our study site, an irrigated village in southern Karnataka and the methods used. Section 4 then explores the informal and non-formal processes of skill acquisition within agriculture, sericulture, and dairy farming. We show that while informal modes of skilling dominate within agriculture, newer skills and technologies are increasingly gained via non-formal learning. We argue that these skills are filtered through gendered mechanisms that further invisibilise women's work. Section 5 concludes with key insights on the social processes and mechanisms of skilling in rural India.

## 2. Skills in agriculture: Unpacking their social meanings

Unemployment in India increased from 2.2 per cent in 2011-12 (NSS-Employment and Unemployment Survey) to 6.1 per cent in 2017-18 (PLFS – Periodic Labour Force Survey), and has been concentrated among educated youth (Azim Premji University, 2021, p. 43), waiting to get employed (Jeffrey, 2010; Kumar, 2016). With few job opportunities outside agriculture (White, 2012; Li, 2017), young people aspiring to create entrepreneurial futures for themselves, seek skills beyond those gained through formal education (Jeffrey and Dyson, 2013). Yet, not all are successful. During the COVID-19 pandemic, several lost their jobs as enterprises shut down, and those migrant, returned to their rural homes to engage in farming and allied activities (Abraham, Basole and Kesar, 2021).

Agriculture remains an important part of the livelihood portfolios of rural youth, a fall-back that helps them cope both with seasonality and the insecurities within alternate activities (HLPE, 2021). Farming is nevertheless not seen as a profession that can contribute to upward social mobility. This perception is strongly gendered, with young men who farm, in particular, finding it difficult to achieve social status and respect within their social milieu, evidenced often by their inability to find suitable brides (Nandi *et al.*, 2022). Against this perception, they evolve diverse strategies to learn skills, refashion their identities and attain social mobility. This is achieved in some cases through migration, as the harsh conditions of work required for successful migration command respect within communities (Rao and Hossain, 2012). Many young men, however, now use migration as a stepping-stone – to earn capital, which can be invested in 'modernizing' their family occupation through acquisition of new skills and technologies. In the context of the fishing industry in Tamil Nadu, Rao and Manimohan (2020) found that young men, while migrating for short periods of time to raise capital, prefer to settle back in their communities as 'boat-owners' rather than 'fishing labour'. They invest in modern technologies like GPS and fish finder devices to make their

occupation more technologically savvy and construct their identities as ‘modern’ (Ibid). In India, caste too matters. Many rural young men, especially of the lower, Dalit castes, who have historically been landless, now seek status by owning land and engaging in independent production (Nandi *et al.*, 2022).

Temporal trends in women’s work participation in the last two decades in rural India show that status production goals (Papanek, 1979) trump the demands for earning incomes in a context of declining fertility rates, availability of non-farm work opportunities for men, and labour-displacing mechanisation (Harriss-White, 2005; Raj, 2019; Afridi, Bishnu and Mahajan, 2022; Iyer, Srinivasan and Rao, 2022). These effects however are differentiated by caste and class, with ‘housewifization’ seen more among middle and upper castes, though in more industrialized parts of Tamil Nadu, Heyer (2014) observed this trend amongst Dalit women too. Reproductive roles of women take precedence (Rao, 2018), with girls socialized and skilled to be carers, surrogate mothers and wives within the household (Srinivas, 1976; Kapadia, 1995). Even though women contribute extensively to farm production, in fact, the agricultural sector employs more than 73 percent of rural women workers (Binswanger-Mkhize, 2013; Pattnaik *et al.*, 2018; Nagbhushan, 2020) and have expert skills, yet given the increasingly unpaid nature of women’s contributions, they see themselves and are seen by society as unskilled and their work subordinate (Samantroy and Nandi, 2022). This perception is intensified as women often have more flexible work pathways, moving between production for subsistence, self-employment and wage work, depending on the season, their responsibilities in the family, caste, class and stage in the life course (Swaminathan, 2020). In such a context, understanding skilling processes and requirements become a challenge, yet remain critical for addressing both the agrarian crisis and jobless growth.

In terms of learning and upgrading skills in agriculture, especially post the Green Revolution in the 1960s, agricultural extension has played an important role (Rao, 2005). National demonstrations, initiated in 1964, were followed by the Training and Visit (T&V) system sponsored by the World Bank in 1974. At the same time, Krishi Vigyan Kendras were established to bridge the gap between scientific research and field-level adoption of technologies (Sajesh and Suresh, 2016). Despite these shifts, the first generation of agricultural extension in India remained top down with information flow from scientists to farmers (Rogers, 1993a). In the late 90s, the government introduced the Agricultural Technology Management Agency (ATMA) at the district level with support from the World Bank. Seen as the second generation of extension in India, it was meant to be demand-driven, solutions to be developed in consultation with farmers and their emerging needs (Rogers, 1993a, 1993b). However, given the gender, caste and class differences in Indian agriculture, such a ‘demand-driven’ approach has ended up bypassing women, people in remote areas and other marginalised groups, who lack both the time and money to access these services (Rao, 2005; Peterman, Behrman and Quisumbing, 2014). ‘Progressive’ or ‘model’ farmers, usually men with some resources, liaise with extension agencies, and the private sector, and often play the role of gatekeepers or knowledge brokers for poorer and women farmers (Mosse, 2004; Taylor and Bhasme, 2018).

Agricultural extension, however, has never functioned as a formal skill training programme, resulting in certification. While formal learning takes place in an institutional set up, is structured in terms of learning objectives and time and is intentional from the learner’s perspective (Rogers, 2014), agricultural extension has always been less formal and more

activity or practice-based. In rural Karnataka, interestingly, extension has been relatively less important as compared to information from the news or television, village fairs, progressive farmers or shopkeepers and input dealers (Kaur, Srinivas and Bazaz, 2021). The lack of formal skill training programmes due to limited provisioning, location of such training and the costs associated with it, however, make it difficult for young people to interpret their agricultural work as 'modern' or 'skilled'. To this extent, similar to domestic skills, which are unpaid and undervalued, agricultural skills too remain invisible and 'taken for granted'.

The National Skill Development Mission expressly aims to bridge the skills gap. However, with a focus on the skill requirements of industry and services, the training on offer is at odds with the reality of rural life, unable to support youth engagement with a plurality of activities, conducted simultaneously, across multiple locations (Evans and Ilbery, 1993; Djurfeldt and Sircar, 2017). Within agriculture, skills training focuses on linking producers to urban and overseas markets. The skills needed are therefore determined primarily by private players and trade bodies, with 'agro-business clinics[4]' mobilised for skill training programmes[5]. They are not geared towards securing family livelihoods, gaining new knowledge or contributing more widely to societal development (Brown, 2020).

Agricultural skills are then mainly gained through immersion within the agrarian context from childhood. Like other traditional occupations such as fisheries or handloom weaving, skills are imbibed through embodied learning (Sundar, 2018). Participation and learning take place not only as individuals, but as 'persons-in-the-world', embedded in the everyday social practices (Lave and Wenger, 1991) of agriculture. Intergenerational learning is the primary informal mechanism for the acquisition of skills and competencies, but equally norms and values in agriculture, making the process both relational and gendered. The socio-cultural meanings of the plough, for instance, have been masculine through history (Kapadia, 1995; Dube, 2001), and sowing, transplanting and weeding, which require bending for long hours, have been feminized operations (Niyati, 2020; Pattnaik and Lahiri-Dutt, 2021), albeit with regional variations in India.

Even if not engaged full-time in farming, most rural children learn these skills from their parents, or grandparents (Kenner *et al.*, 2007), supporting them on weekends or during key agricultural periods. School timetables are adjusted to ensure vacations coincide with agricultural seasons to enable this flexibility to rural households. Mitra and Rao (2017, p. 22) found high school girls in the Vidarbha region of Maharashtra engaging with cotton-picking activities on weekends to earn money to pay for their school fees. In rice growing states, skills in transplanting, such as the placing of the seedling, packing of the earth, and spacing of seedlings are passed on from mothers to daughters, along with skills in cooking, gathering fuel or caring for animals (Mencher and Saradamoni, 1982; Nieuwenhuys, 1993). Informal learning thus takes place across generations through daily activities with family or at work, is unstructured in terms of learning objectives and time, and non-intentional from the learner's perspective (Rogers, 2014).

[4] Agro-clinics and agro-business centres provide expert advice to farmers on various technologies.
[5] National Policy for Skill Development and Entrepreneurship 2015, https://www.msde.gov.in/en/reports-documents/policies/national-policy-skill-development-and-entrepreneurship-2015 (Accessed on 18 November 21)

While such intergenerational learning forms a major part of informal skilling, Reyes-García et al. (2014) find that modern and traditional agricultural knowledges and skills are not mutually exclusive, but rather gardeners draw on both to respond to changing environmental and socio-economic contexts. Peer learning too then becomes an important alternative mode of informal skilling (Robinson-Pant, 2016), as noted in the case of 'progressive' farmers as local knowledge brokers.

Apart from informal and formal modes of skill acquisition, the education and skills literature highlights non-formal modes of learning. Such learning does not take place at an educational institution, and doesn't result in certification, but is structured in terms of learning objectives and time and is intentional from a learner's perspective (Eshach, 2007; Rogers, 2014, 2019). It can thus take place at any stage of the life course. Women's self-help groups (SHGs), engaging in capacity building through workshops on tailoring, making pickles and savouries, for instance, are an important mechanism for non-formal skilling of adult women. Women farmers (who own or lease in land) receive agricultural information either through self-help groups or television (Govil and Rana, 2017). SHG trainings, however, do not necessarily result in gainful employment, rather the services SHGs provide such as microfinance help the women members manage expenses, repay loans and avoid future loans (Pattenden, 2010; Taylor, 2012; Guérin, 2014).

The creation of livelihood portfolios is a delicate balance of structural conditions, education, formal and informal skills, and entrepreneurship that enable men and women to construct dignified and respectable livelihoods (Rao and Hossain, 2012). While modern education and learning are geared towards leaving the rural home (Corbett, 2007; Huijsmans *et al.*, 2021; Rao and Patil, 2022), we investigate the skills required to stay in or return to agriculture in contemporary times. This paper contributes to understanding the gendered processes and social mechanisms underlying informal and non-formal learning in agriculture and allied activities in the context of an absence of appropriate formal skilling opportunities via the National Skill Development Mission or indeed school curriculum (Shukla, Barkman and Patel, 2017).

## 3. Context and Methods

Marked by smallholder cultivation, Iggaluru is a village in the southern plains of Karnataka in the erstwhile princely state of Mysore. In 2011, the village had 726 households, 59 per cent of them cultivating their own lands. In the early 20$^{th}$ century, the Krishnarajasagar dam brought irrigation to the neighbouring district of Mandya, leading to a shift from cultivation of dryland crops (finger millet and groundnut) to sugarcane and paddy. In the late 1990s, a tributary of the Cauvery that flows near Iggaluru was dammed with a medium irrigation project. Apart from irrigating 733 acres in the village, this resulted in raising groundwater levels, contributing to a rapid increase in private borewells on farms. With improvements in irrigation infrastructure, sericulture emerged as a key household occupation for the dominant, land-owning castes (Swaminathan and Das, 2017), alongside agriculture, dairy farming, and horticulture, as mulberry cultivation too required land. Prices of silk cocoons halved in 2020 following the nationwide lockdown[6], impacting the earnings of sericulturists in Iggaluru.

[6] https://www.thehindu.com/news/national/karnataka/post-relaxation-of-lockdown-norms-cocoon-prices-go-up-marginally/article32595159.ece (Accessed on June 14, 2021)

[Figure 1 about here]

The village residents belong to four major castes – the land owning Vokkaligas and Lingayats, the middle caste Kurubas, and the Dalits. Landownership is less unequal in the southern region than other regions of the state (Bansal, Usami and Rawal, 2018) and Iggaluru confirms the pattern (see table 1). Only one third of Dalit households are landless, as is seen in comparable village studies (Kumar, 2017), the remaining own holdings of less than a hectare. While Lingayats and Vokkaligas are both politically dominant in Karnataka, Lingayats typically dominate North Karnataka politics, and Vokkaligas hold sway over the south. It was this political dominance of the Vokkaligas that led sociologist M. N. Srinivas (1959) to coin the term 'dominant caste', an idea further developed by Scarlett Epstein in her longitudinal village studies in Mandya district (Epstein, 1962, 1973, 2007).

[Table 1 about here]

Iggaluru was studied in 2013 by Author 1 as part of their doctoral dissertation. Mixed methods were used, with a sample household survey of 170 households and semi-structured and key informant interviews. The 2020-21 study used the demographic and caste data from the 2013 study as a basis for recruiting respondents across caste groups. Given the dominance of the Vokkaligas, we chose Vokkaligas among the dominant, Kurubas among the middle, and Dalits amongst the lower castes, in our sample. Additionally, respondents were also identified through interactions with key informants and ASHA workers (Accredited Social Health Activists). In this paper we focus on Vokkaligas and Dalits to highlight the social mechanisms which mediate skill acquisition in agriculture and allied activities.

Work-life course interviews were carried out with 66 respondents, both men and women, aged 18-65 years in the local language, Kannada, audio recorded, transcribed, and translated for analysis. Informed consent was taken for the research as per institutional ethics protocols. A team of four members including Author 1 conducted the interviews from November 2020-February 2021, between the first and second waves of the COVID-19 pandemic. A rural house was rented for the period of the study and the research team stayed in the village. All interviews were carried out outdoors with masks, without compromising privacy of the respondents. Each interview was conducted by two interviewers, separately with fathers, mothers, sons, and daughters within a family, to understand the gender differentiated context for participation in paid and unpaid work across generations. The interviews were coded using the open source software WordCommentsAnalyzer (Abdekhodaie *et al.*, 2018). See table 2 for sample characteristics.

[Table 2 about here]

The interviews focused on the key considerations of locating individual lives in wider contexts, understanding that lives are linked, and engaging with subjectivity (Lloyd-Sherlock and Locke, 2008; Locke and Lloyd-Sherlock, 2011). Life course analysis considers individual agency as well as institutional and structural conditions. The interview tool gathered work histories and marital histories, including information on the gender divisions of labour, skills, and management of finances.

## 4. Skill acquisition within agriculture in rural Karnataka

Ravi (Vokkaliga, 50 years) and Sarita (Vokkaliga, 40 years) have a farm of two acres on which they cultivate sugarcane, two crops of paddy a year, one crop of finger millet (ragi), some coconut trees, as well as grasses for their cattle and mulberry for sericulture. They carry out home-based sericulture every two months, grasses are cut by hand and brought home by Ravi on his motorbike. They have two unmarried daughters, the older one resides with an aunt in Bengaluru for work, and the younger one is in college and lives in Iggaluru with her parents. Geeta, their younger college going daughter regularly milks the buffalo and takes the milk to the dairy.

A typical household owns some land on which finger millet and grasses to feed cattle are grown, and if irrigated, mulberry leaves, paddy, sugarcane, coconut plantations and vegetables such as tomato and babycorn. Cattle are not left to graze, instead grasses are brought home for their feeding. The livelihood portfolio of households employ varying degrees of agriculture, sericulture, dairy farming, and non-farm work depending on available family and hired labour, land, credit, and capital. Informal skilling here is the main route to acquisition of skills, as we discuss in turn below.

[Table 3 about here]

### Learning in Agriculture

The steps involved in agriculture broadly include ploughing, weeding, transplanting, irrigating, application of manure and pesticides, harvesting, threshing, and marketing the produce. While girls are not expected to help on the farm in their natal homes, they learn to share the load of housework and participate in the home-based tasks in sericulture and dairy farming, while their mothers multitask on the farm and at home. Most of the men in our study learned various tasks around the farm by watching their parents and helping them. Boys from landowning Vokkaliga households begin helping their parents from the age of 9-10 years. Their first tasks are often taking coffee and tea for labourers hired for harvesting paddy or finger millet. Young girls may also do this task occasionally. Boys subsequently help gather grasses cut by their parents and carry them home on a cycle or motorbike.

In Sashi's case, this transmission of skills took place from grandfather to grandson, while his father spent time searching for a government job. Sashi's family is an exception among the Dalit households of the village. He is the oldest sibling of three, his mother is a Gram Panchayat member, and he spent his early income from wage work as a head loader to educate his father and younger brother, so they could secure stable jobs. His father failed to get a government job, but his younger brother completed a PhD, and teaches in a university. Sashi's sister is a public litigator in the nearby town. Sashi is the only member to stay in farming, a 'continuer' (Cassidy, Srinivasan and White, 2019), who has taken the responsibility of his parents' farm. He cultivates 3 acres owned by his mother as well as an acre of land leased in. He recollected the process of acquiring skills in agriculture thus:

> "My father did triple degrees and was not in a situation to go for wage work. Nobody would even call him for work because he was considered too educated. Even when we had to transplant our own land, he did not know how to prepare the land or plough it. I got more interested in the land. I thought, why shouldn't I do farming? I studied till 10$^{th}$ standard, but we then had financial problems, so I didn't complete it. My mother

> and her father taught me everything about farming. Then, my father's father was also there, he taught me the most about farming." (Sashi, 33 years, Dalit)

Sashi's case highlights the important role that grandparents play in intergenerational learning and livelihood preservation in agriculture, contrary to popular belief that older farmers are less productive or capable of adapting to a changing economy (Rigg *et al.*, 2019).

Ramegowda (45 years, Vokkaliga) explained the processes within paddy cultivation prior to using machines for ploughing, harvesting, or threshing. In his account, we found that the acquisition of skills was informal, yet there was intense physical and manual work that went into learning the skills as a young person. He said,

> "I learnt through observing my uncle and labourers. What they were doing when preparing the land… ploughs were different then, we should not lift our hand, they used to tell me to join them, and teach me by saying 'it is not like how you do it' and press my hand really hard on the plough, my hand used to get red and bruises formed. Tears also formed in my eyes. They never let me go even if I cry. They dragged me till a certain distance [with the plough] along with them. And when they stopped for food, I tried doing it on my own, and somehow learnt the work."

The gendered dimensions of such skill acquisition through informal processes are interesting to note. We heard men across caste describe a process of maturing as they grew up (*buddhi bandādmele*), acquired skills, and took on greater responsibilities (*Jawābdāri*) on their farms, in addition to the physicality and strength required. Rajesh (32 years, Vokkaliga) explained how he began working on the land after completing his school education in 2002, clarifying the age at which he assumed responsibility for the land. He said,

> "I would be at home, we would help our father, but I fully took it as a responsibility from them in 2004."

For men like Rajesh, the process of maturing is also linked to marriage and starting a family. Such articulations were absent for women, who viewed their contributions to agriculture as helping and as a habitual practice, and often as their responsibility to the household (Rao and Mitra, 2013). This mirrors the statistical representation of women as 'unpaid household helpers' in agriculture[7]. Sarita (Vokkaliga, 40 years) said,

> "This is *Samsārika Jīvana* (domestic lifeworld). It was only play time when we were children. Now I have a responsibility towards my house, my children, my husband and my farm."

Sarita saw the farm as an extension of her domestic and care responsibilities at home (Rao, 2012). Younger Vokkaliga women identify much less with their farms, Sarita's older daughter works in Bengaluru after completing her B.Com degree, and aspires to marry into the city, rather than into a farming household. For those young women that marry into Iggaluru, education and office jobs nearby are an aspiration. Much of their daily contribution to productive work in agriculture, dairying and sericulture, is however included as part of their domestic responsibilities.

[7] See for instance the Periodic Labour Force Survey 2017-18, http://mospi.nic.in/publication/annual-report-plfs-2017-18 (Accessed on 18 November 21), pp. 99.

Informal skill acquisition via peer learning has been reinforced during the COVID-19 pandemic when several workers from Iggaluru in the service sector in the capital city of Bengaluru returned home and took up farming. One morning in the Dalit hamlet, we met 25year old Kumar, clad in a McDonald's t-shirt, who had returned during the first wave of the pandemic in 2020, after losing his job at a McDonald's outlet in Bengaluru.

At the time we interviewed him, he was farming on 5 acres of leased land. On 1 acre, he invested whatever savings he had and took an additional informal loan to plant tomatoes. He said,

> "No, I don't have any training experience. Now I have planted tomato on one acre. One person is there for back up, V Sir from the estate nearby. He knows everything from A to Z about agriculture, so I take his suggestions and practice farming. From when I planted tomato till it is grown, at what time what should be done, every single thing he has guided me. What medicine should be given he has taught me."

Given his social skills, Kumar had befriended V Sir when he worked at the horticulture estate as a wage worker for 6-7 months after returning from Bengaluru. Based on this experience he decided to grow tomatoes on his own. Kumar too had first worked on his parents' land of 30 guntas[8], applying fertilizers and undertaking other chores when he was 14. We find that while both men and women acquire agricultural skills intergenerationally, men expand their social networks and learn new skills through other channels as well, including via peer learning, while skill acquisition by dominant caste women and girls is confined to the domestic sphere.

In contrast, Dalit women seem to have more access to opportunities for non-formal skill acquisition in agriculture. In the last decade, a private corporation, Namdhari, has leased in village land for the production of hybrid paddy seeds for use in precision agriculture. Their nursery employs a small number of Dalit women, who earlier worked as agricultural labourers, thus having prior knowledge of paddy transplanting. Rajamma (45 years, Dalit) used to be an agricultural labourer from the age of 10. When her adult son got a government job in Mysore in 2016, he asked her not to work. However, once Namdhari came into the village, she resumed working. At the Namdhari nursery, she learned (by watching and doing) how to cross varieties of paddy, differentiate between different paddy varieties, plant the saplings, de-weeding, ensuring proper labelling of the plants, and then cutting, packing, and stapling the saplings for sale. She described the amount of time and effort that went into her work in the nursery,

> "It takes time – they write it in the book – they give a list and as per that list, we plant the saplings next to each other. We have to plant it according to plan. According to the filling of the crate, we bring that variety. We are the ones who do that work – we fill the crate up, distribute the line. There is another lady who works with us – she is literate. We have learnt everything from observation and we do it accordingly – she makes a note of the number and informs the Sir"

The private sector here intervenes in hybrid seed production using the labour of Dalit women for particular agronomic practices, building on their knowledge and skills in paddy transplantation. Rajamma's non-formal learning and indeed the employment opportunity

[8] 40 guntas = 1 acre

itself is based on her prior informal learning. She hence makes a distinction between this 'skilled job' and her prior work as an agricultural labourer. While the activities are not hugely different, the meaning and value given to them are. Rajamma's son too prefers that his mother work at the Namdhari nursery than as an agricultural wage labourer on a dominant caste landowner's farm, as she earlier used to. He took pride in his ability 'to provide' for his mother, freeing her from hard, manual work, as with few other options, most older Dalit women continue to engage with agricultural wage work.

It is common however to see dominant caste Vokkaliga women, particularly from households that have diversified to set up local businesses, retreating from agricultural wage work to work only on their own family farms. Rajesh (32, Vokkaliga) said,

> "Now it is also a matter of prestige, people think why should we send our wife or mother to work, even I have got that thought. Back then in agriculture women would work, but now it is rare, in 100 only 10% of them help. They will do household work now. In a year once or twice they will help (on the family farm) that's it."

The internet plays an important role in bridging the knowledge gap between Vokkaligas and Dalits, as many young men access YouTube and Google on their smartphones. While Vokkaliga men are interested in newer ventures such as pisciculture and apiculture, Dalit men use the internet to get information on crop prices. Women have lesser access to the internet, and they don't search for agricultural information online.

**Learning in Sericulture**

Sericulture, a major income-earning activity in the region, with its value chain supported by the Sericulture Department, involves various tasks such as bringing the mulberry leaves from the farm to home, feeding the silk larvae at regular frequency, application of limestone to prevent disease, quality control by removal of damaged (milky) larvae and pupae, renting the mountages for production of cocoons (*chandrike)* at the appropriate time, transfer of third instar larvae to the mountages for pupation, and marketing the cocoons.

Historically, the Sericulture department has offered a range of skilling programmes to support the production of high-quality cocoons. Since the late 1990s, there was a change in the technology of silkworm rearing from large circular woven bamboo trays called *thatte* to rectangular wooden trays called *meju* (See Figure 2). The first samples of the *meju* were given to a few sericulturists in Iggaluru in 1995-96. Subsequent knowledge transfer took place rapidly by peer learning leading to the widespread adoption of the *meju* for home-based sericulture. In 2013, eggs would be sold at the rearing centre, but due to increased mortality at early instar stages, in 2020-21 the department and rearing centre shifted to selling first instar larvae to sericulturists rather than eggs. This shift also removed the necessity of cutting mulberry leaves for the early stages of larval growth. These shifts in technology have had impacts on the skills needed.

[Figure 2 about here]

Sericulture, practised within the home, is quite labour intensive. Dalit households, lacking adequate capital for both the new equipment and hiring labour, therefore are hardly able to engage in it as entrepreneurs. Interestingly, large farmers too avoid sericulture due to the requirements for family labour. It is therefore mainly small and marginal farmers, primarily among the Vokkaligas, who carry out sericulture (Swaminathan and Das, 2017). Young girls

and boys learn from their parents several home-based tasks through a process of intergenerational learning. Jyotsna (21 years, Vokkaliga) recounted doing this as a young child at home,

> "The larva should grow little, and that process takes around 20 days, step-wise it will change, when it is small, we should cut the leaves small and give them, again when it grows we can give the leaves directly."

The application of limestone powder near the silk racks are not done by children, especially girls, as this is believed to produce heat in the body. Menstruating women and girls also refrain from working with the silkworms as they believe it would impact the yields adversely. One finds here the playing out of gendered social norms and taboos in the divisions of labour, similar to the prevention of women from touching the plough in agriculture (Dube, 2001, p. 149).

Hiring labour in sericulture is a common practice, with women labourers hired for transferring the larvae to the mountages, and quality control. It is typically older Dalit or Vokkaliga women who take on these tasks. Chennamma (52 years, Dalit) tried one crop of sericulture, following which she bore her children. She has about an acre of land, which is dry and of poor quality. Two attempts to dig borewells failed. Indebted and lacking capital, she leased out the land on a fixed rent and works as a wage labourer in sericulture. She said,

> "I work for someone else, as coolie. I did sericulture myself once. I had no experience then. I watched and grew one crop, but it didn't succeed. Then the kids were young, and I had my deliveries."

Despite some taboos, women undertake the majority of tasks involved in sericulture. Men, however, transport the cocoons to the cocoon markets at Channapatna or Ramanagara, either by private two-wheelers or by the public bus. Belonging to the upper caste, restrictions on mobility play out quite strictly, preventing women from driving vehicles or going to the markets. They hence retain their role as unpaid household workers and depend on men for market-related skills.

**Learning in Dairy Farming**

Dairy farming in Iggaluru comprises of various tasks such as bathing milch animals, cleaning the shed, collecting dung, cutting grasses and transporting them home, feeding grasses, purchasing and preparing commercial feed, milking, selling the milk, maintaining the dairy passbook, quality control, veterinary care, managing pregnancies and young calves, etc.

Older women have in the past had non-formal trainings for veterinary care and dairy development under the aegis of self-help groups.. Young men do not encounter such training opportunities. Dairy farming is practised by most landed households in the village. Sarita (40 years, Vokkaliga) recollected,

> "The SHG has not been very active in the village except for women involved in rearing cows. There are 5-6 groups in the village and all of them are only involved in rearing cows."

Such programmes are restricted to those who already practice dairy farming in their homes. Although Rajamma (45 years, Dalit) was a member of the SHG, they only imparted veterinary trainings to those who had milch cattle. She said, "They would take people who

had buffaloes at home". She didn't have a milch animal, and so missed out on such skilling initiatives by the SHG.

The combination of informal and non-formal learning in dairy farming is interesting, and strongly gendered. Young boys are typically engaged in bathing the animals and fetching grasses from the farms. From the 1960s up until a few decades ago, animals were taken for grazing, or left loose between February and April when there were no crops in the fields (Balasubramanyam, 1961). This is now a rare sight, as grazing lands have become scarce, and with irrigation, cropping is carried out all year round.

Boys learn about appropriates grasses, how to cut and carry, from their parents. Interestingly, they now use their parents' two wheelers to transport the grasses from the farm to home. The skills here relate to cultivating selected grasses, using grass cutting machines, and driving two-wheelers to transport the grasses home, rather than dairy farming per se.

Milking the buffaloes is a feminised process where mothers teach young girls how to milk the buffaloes while they are still in school. Milking the buffalo is a physically demanding task and causes intense pain in the thumbs in the initial stages. Our interviews revealed how families gave up dairying during phases of their life when the household lacked a female member. Ravi (50 years, Vokkaliga) recounted how he sold the buffaloes when he lost his mother. When he got married to Sarita (40 years, Vokkaliga), they once again purchased a few buffaloes. He said,

> "We had buffaloes and cows. At the age of 20, I used to take them for grazing, and my mother would milk the animals. After my mother passed away, we sold the milch animals. When I got married and my wife came home, we again bought buffaloes."

Here one finds that divisions of labour are closely interconnected to both the perception of skills required and their means of acquisition. While women's skills in agriculture often remain hidden, in the case of dairying, milking is recognized as an important skill, and dairying itself therefore hinges on the presence of women holding such skills. Further, as milk collection centres are in the village, unlike in the case of sericulture, women take the milk to the nearest centre and maintain the passbooks. While some of the older Vokkaliga women are non-literate, they do have a sense of the rate per litre. Young, educated women also help their mothers in several cases, they milk the animals and take the milk to the dairy. Kalavathi (21 years, Vokkaliga), a B.Com graduate described the measurement process:

> "They put the milk in the container. There is a mark there, it starts from 28. The lower mark I don't know but the highest will be 30 or so, when the mark comes up, the line is visible. Depending on where the needle stops, the machine tells us the degree… fat, SNF (Solids-Not-Fat), all that is there. Where that line stands based on that they say and the machine shows everything, water content too."

While basic record-keeping and accounting skills are learned by women engaged with milk production and sale, the same is not the case for home-based economic activities such as making butter for local sale. Economic production here is seen as an extension of production for subsistence. The skills are passed down informally from mothers and aunts to daughters. Dalit women rear fewer cattle and use the produce primarily for subsistence. Men's skills, while perhaps not as critical, are nevertheless more visible, involving activities considered masculine such as driving.

## 5. Conclusion

We show in this article that in the context of irrigated cultivation in the southern plains of Karnataka, mainly by dominant caste Vokkaligas, households persist in agriculture, or at least retain some element of agriculture as part of their household livelihood portfolios. Young men and women acquire skills in farming through generational embodied learning from a young age of 9-10 years. During the pandemic, farming has been a fallback option even for those young Dalit and Vokkaliga men who had left the village for work in the city. As contractual informal sector jobs are lost, or earnings from these dwindle, young men return to the village to support their parents in intensifying agriculture, horticulture, dairy farming and in some cases sericulture. They seek to construct these traditional activities in more modern terms, using advanced skills and technologies, growing high value horticultural crops such as tomatoes and babycorn, enhancing also the potential returns from them.

Even though skill training in agriculture and allied activities is a priority in Karnataka[9], formal skill training opportunities, through Krishi Vigyan Kendras, or other extension institutions, are hardly available. In Ramanagara district, for example, a skill gap has been identified in sericulture at the district level, in relation to the rearing of bivoltine cocoons which have higher pest resistance than crossbred varieties[10]. In the absence of formal skill trainings, we found that agriculturists received know-how via personal contact with state functionaries who they consulted from time to time, or through other informal and non-formal learning mechanisms. These of course are gendered in terms of access, meaning and value.

When we compare the valuation of embodied learning in agriculture among men and women, we find an articulation of coming of age, gaining responsibility and taking charge among young men. Such an articulation is absent among young women, though with some variations across caste and class. Though the dominant caste Vokkaliga women are engaged in family labour on the farm or in the home, they are never expected to take charge of their parents' or indeed marital farms. Their contributions are constructed as help or as habitual practice, despite the fact that they are indispensable to dairy farming or sericulture, both sources of substantive household income[11]. Seen as an extension of household work, their skills are rendered invisible. Also, with little access to markets, their dependence on men is kept intact. Dalit women on the contrary actively participate as both family labour and wage labour on the farm, proud of their skills in the production of hybrid rice varieties for a corporation, for instance. Yet given their social location, there are limits to which these skills can be used for upward social mobility.

Informal skilling through intergenerational learning emerges as the most important route to skill acquisition in Iggaluru's agriculture, highlighting the role of the elderly and unsettling dominant notions around the age of workers in global policy debates. Institutional actors such

[9] See Karnataka Skill Development Policy 2017-2030 here https://kaushalya.karnataka.gov.in/page/Contact/Department%E2%80%99s+District+Office/en (Accessed on 11 October 2021)

[10] See District wise skill gap study for the state of Karnataka 2013 by the National Skill Development Corporation https://skillsip.nsdcindia.org/knowledge-products/district-wise-skill-gap-study-state-karnataka (Accessed on 11 October 2021)

[11] In 2008-09 in Alabujanahalli village, crops contributed 30 per cent of the total annual household income, and animal husbandry and sericulture each contributed 7 per cent of the annual household income (Bakshi and Das, 2017, p. 224).

as the private sector and self-help groups are important actors in the domain of non-formal agricultural skilling. We find that informal skilling becomes a prerequisite to non-formal skilling, drawing on the socially accepted divisions of labour across gender, class, caste and the skills embedded therein, to build the new skills required in response to changes in agricultural technologies and practices. Given this relationship, both informal and non-formal learning and skilling opportunities are filtered by the same social mechanisms that underpin the landscape of work. For instance, while Dalit men and women learnt horticultural or seed production skills from working as wage workers, Vokkaliga women learnt aspects of dairy farming via veterinary training programmes targeted at landed communities through their association with self-help groups. Here caste and class appear to trump gender in terms of access to non-formal skilling opportunities. Women's self-help groups provide women with opportunities for skill acquisition; however, by constructing these skills as 'domestic', they also contribute to both a feminisation and devaluation of the activities in which women are involved. Social norms end up invisibilizing women's skills.

Despite an aspirational and material move away, agriculture remains an important element of the livelihood strategies of rural people. Apart from agricultural livelihoods being generally seen as non-remunerative in relation to the industrial and services sectors, agriculture is not recognized as a skilled profession and hence neither the knowledges nor the practices of farmers are adequately valued. For those staying with or returning to agricultural livelihoods, therefore, especially young men, there is a need to improve the respectability of agricultural work through gaining and applying 'skills' seen as 'modern' and 'innovative', be it new agricultural practices, new varieties of crops, or other technologies. In the context of this study, the near-absence of formal skill training programmes, an important mechanism for upgrading skills, has meant that rural youth have struggled with developing identities that reflect 'agripreneurship' – the ability to be entrepreneurial within agriculture. As a consequence, young men particularly among the Vokkaligas visualize their growth in a combination of rural non-farm work (setting up a business in the village) and new agricultural practices. For Dalits, the motivations signify a shift in status from wage-workers to cultivators. Informal and non-formal skilling then remain central to the acquisition of agricultural skills, as well as their intergenerational transmission, and therefore critical for the future sustainability of our agriculture and food systems.

## Declaration of Interest statement

The authors have no conflicts of interest to disclose.

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Table 1: Caste-wise land ownership in Iggaluru in 2013

| Caste | Percentage of households | Percentage of land owned | Average land owned per household (in acres) |
|---|---|---|---|
| **Vokkaliga** | 52.4 | 56.7 | 1.8 |
| **Lingayat** | 12.4 | 24.7 | 2.8 |
| **Kuruba** | 10.0 | 9.3 | 1.8 |
| **Dalits** | 19.4 | 8.1 | 0.7 |
| **Other castes** | 5.8 | 1.2 | 0.35 |
| **Total** | 100.0 | 100.0 | 1.68 |

Source: Author 1's Sample Survey, 2013

Table 2: Summary characteristics of the Study Sample

| **Sample characteristics** | | **Vokkaliga** | **Kuruba** | **Dalit** | **Total** |
|---|---|---|---|---|---|
| **Gender** | | | | | |
| Male | | 11 | 11 | 10 | 32 |
| Female | | 11 | 11 | 12 | 34 |
| Total | | 22 | 22 | 22 | 66 |
| **Location** | | | | | |
| **Village** | | | | | |
| | Male | 9 | 8 | 9 | 26 |
| | Female | 9 | 9 | 9 | 27 |
| **City** | | | | | |
| | Male | 2 | 3 | 1 | 6 |
| | Female | 2 | 2 | 3 | 7 |
| **Occupation** | | | | | |
| **Agriculture** | | | | | |
| Cultivators | | | | | |
| | Male | 7 | 6 | 5 | 18 |
| | Female | 3 | 6 | 3 | 12 |
| Agricultural wage labourers | | | | | |
| | Male | 1 | 0 | 1 | 2 |
| | Female | 1 | 0 | 2 | 3 |
| **Other wage labour** | | | | | |
| | Male | 1 | 0 | 2 | 3 |
| | Female | 0 | 0 | 0 | 0 |
| **Salaried employment** | | | | | |
| | Male | 1 | 3 | 2 | 6 |
| | Female | 2 | 0 | 2 | 4 |
| **Self employed** | | | | | |
| | Male | 0 | 0 | 0 | 0 |
| | Female | 0 | 1 | 1 | 2 |
| **Domestic work** | | | | | |
| | Male | 0 | 0 | 0 | 0 |
| | Female | 4 | 2 | 2 | 8 |
| **In education** | | | | | |
| | Male | 0 | 1 | 0 | 1 |
| | Female | 1 | 1 | 2 | 4 |
| **Unemployed** | | | | | |
| | Male | 1 | 1 | 0 | 2 |
| | Female | 0 | 1 | 0 | 1 |

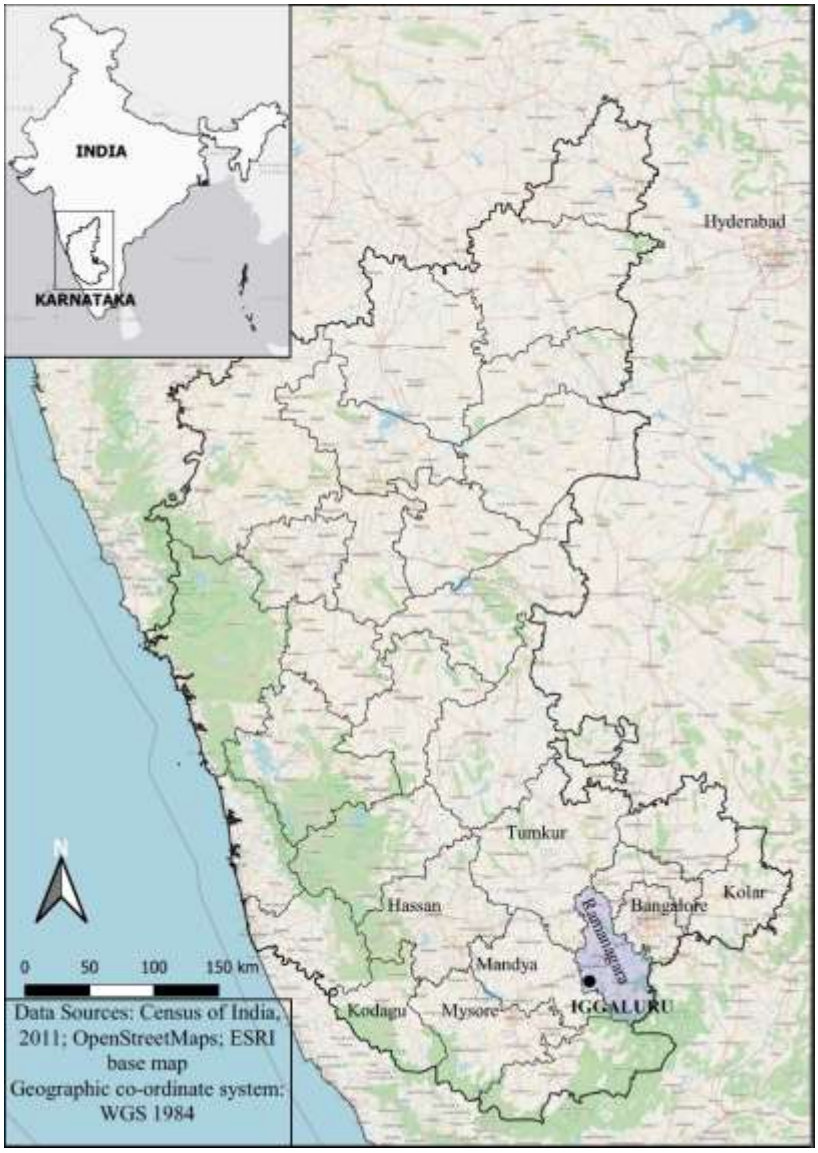
Source: Fieldwork, 2020-21

Table 3: Learning in Agriculture and Allied Activities in Iggaluru

| | **Agriculture** | **Sericulture** | **Dairy Farming** |
|---|---|---|---|
| **Informal** | Intergenerational learning: Learning by seeing and doing (process of maturing and responsibilizing for young men)<br><br>Apprenticeship with a skilled farmer: tomato planting | Intergenerational learning: Rearing silk larvae at different stages | Intergenerational learning: Milking the animals |
| **Non-Formal** | Corporation: Namdhari precision farming for paddy, transplanting processes carried out by Dalit women | Sericulture fairs | Veterinary training programmes (with SHGs): accessible to women from cattle-owning households, excluding Dalit women |

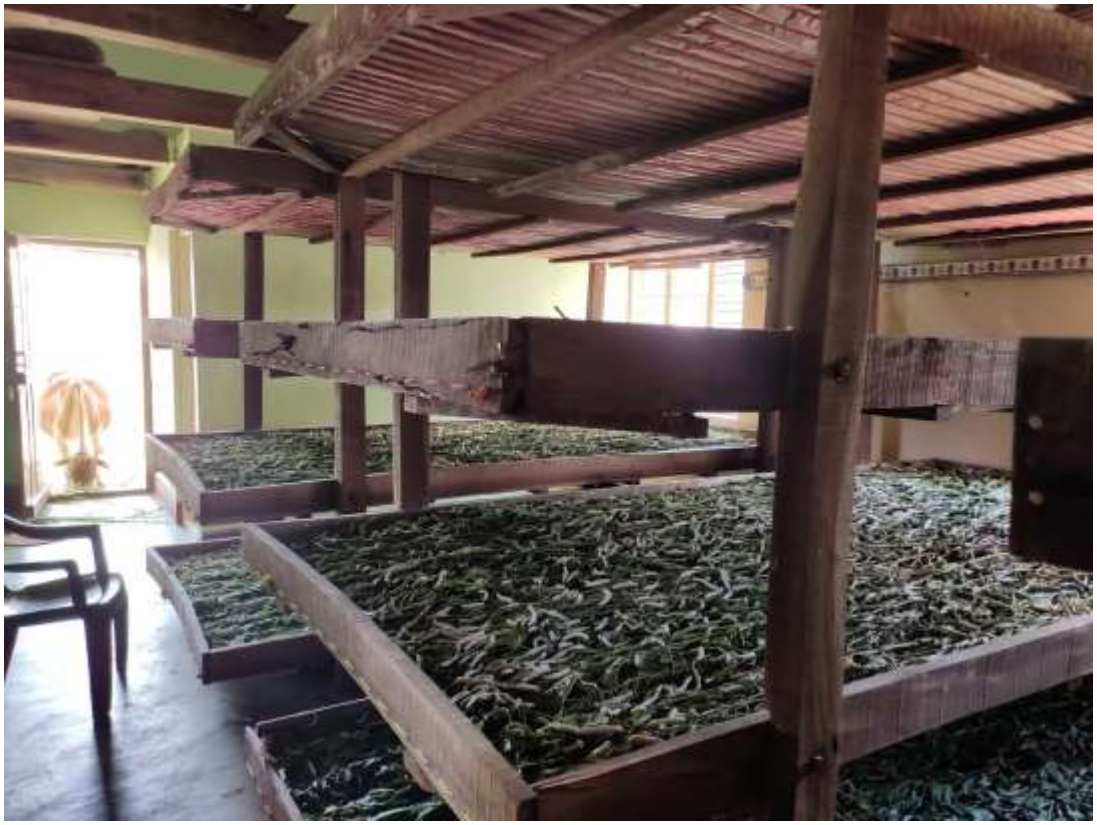
Source: Fieldwork in 2013, 2015, 2016, 2020-21

Figure 1: Map of Iggaluru




Source: Authors

Figure 2: A picture of the '*meju*' in the living room of a Vokkaliga house in Iggaluru



Source: Authors, 2021